

**TEACHING AND LEARNING THROUGH  
SIMULATION: STUDENT NURSES' EXPERIENCES**

by

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### DECLARATION

I declare that **TEACHING AND LEARNING THROUGH SIMULATION: STUDENT NURSES' EXPERIENCES** is my own work, and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.



6 December 2017

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**SIGNATURE**

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# **TEACHING AND LEARNING THROUGH SIMULATION: STUDENT NURSES' EXPERIENCES**

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## **ABSTRACT**

The purpose of study was to explore and describe the student nurses' experiences of teaching and learning through simulation. The study was conducted at one public college of nursing located in the city of Tshwane in the Gauteng province of South Africa. A quantitative exploratory and descriptive design was used to achieve the objectives of the study. The selected population comprised second year student nurses registered for the programme of education and training leading to registration as a nurse (general, psychiatric and community) and Midwife (R425, 1985; paragraph (iii) as amended) at the selected college of nursing. The number of registered second year student nurses was 250, and it was found to be manageable and adequate for data analysis. Consequently, the whole population was included in the survey and no sampling procedures were carried out. Data were collected by means of a self-administered structured questionnaire and STATA 14 program was used for data analysis.

According to the results of the study, student nurses' experiences of teaching and learning through simulation were positive. The results showed that teaching and learning through simulation led to significant increases in knowledge and skills acquisition among student nurses who took part in the study. In addition, the student nurses' attitude to teaching and learning through simulation were positive. However, based on the findings of the literature review on trends and best practice standards for simulation, it is recommended that the college introduces high virtual technology simulation as it is only using low and medium fidelity simulation. This will ensure that the college is up to date with trends and best practice standards for simulation, and for improving simulation teaching learning outcomes for large number of student nurses.

## **KEYWORDS**

Experiences; learning; simulation; teaching.

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## *Dedication*

*I dedicate this to my husband who has supported me through my studies with love by taking care of our children and seeing that the household did not reach a state of chaos when I was busy. I really appreciate and love you.*

*To my daughter and son, thank you for helping mummy when the need arose, and for being so understanding when mummy was busy and could not play with you. I love you both for all your efforts and it was appreciated.*

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**LIST OF ABBREVIATIONS**

CINAHL	Cumulative index of nursing and allied health literature
PubMed	National library of medicine service
UNISA	University of South Africa
SANC	South African Nursing Council
SSH	Society for Simulation in Healthcare
NCSBN	National Council of State Boards of Nursing
INACSL	International Nursing Association for Clinical Simulation Learning
SSH	Society for Simulation in Healthcare
Sim-IPE	Simulation-enhanced interprofessional education
HPSs	Human patient simulators

# **CHAPTER 1**

## **ORIENTATION TO THE STUDY**

### **1.1 INTRODUCTION**

The role of nurse educators is to facilitate learning of theoretical and practical clinical skills among student nurses, and more importantly to assist the student nurses to integrate theory and practice at all levels through the use of appropriate teaching approaches and learning facilitation techniques. The clinical area is ideally the primary place of learning practical skills for student nurses. However, the competition for learning opportunities between nursing students and allied health and medical students restrict student nurses learning activities leading to sub-optimal experiences for content integration and mastery. In addition, the increasing number of student nurse intake restrict student nurses learning activities, thus increasing the importance of incorporating simulation into the nursing curriculum as an alternative to clinical placements and for replacing clinical hours (Bradshaw & Lowenstein 2014:239; O'Connor 2015:146). The increasing numbers of students per intake, necessitated a change from teaching at the patient bedside to simulation laboratories so that patients are not overwhelmed with large number of students and to ensure patient safety.

Simulation is a valid teaching and learning strategy that is used widely in nursing education. There is adequate literature on its benefits as a teaching learning strategy. According to Wilford and Doyle (2006:604), simulation allows multiple learning objectives to be taught in a realistic clinical environment which could be hospital or community-based without harming patients. In addition, simulation is used to assist student nurses to apply knowledge to clinical context, to create opportunities for students to learn a wide variety of specific clinical skills without the potential risk of harming real patients and in a safe environment (Bonnel 2010:176). Through simulation, students develop psychomotor and technological skills and the use of simulators enable students to think through clinical situations and make independent decisions (Oermann & Gaberson 2014:277). Following any simulation session, the learners are able to reflect on their performances with a facilitator.

According to Pulido-Martos, Augusto-Landa and Lopez-Zafra (2012), simulation is one of the strategies nurse educators can use to deal with situations in the clinical area that cause stress and anxiety among student nurses; situations such as a fear of making mistakes, negative responses to the suffering and death of patients. The same authors further explain that simulation enable the student nurses to manage technology and relationships with other members of the organisation including working with people they do not know.

Techniques used in simulation teaching vary from low to high fidelity depending on the degree that they match reality (Cant & Cooper 2010:2). Low fidelity replication includes replica anatomical models, objects (equipment), manikins or patients' simulators and peer-to-peer learning using case studies or role-plays (Kinney & Henderson 2008). High fidelity computerised manikins attempt to replicate human anatomy and can be programmed to imitate vital signs (Hravnak, Beach & Tuite 2007) for skill and decision-making enhancement (Kuiper, Heinrich & Matthias 2008). Two-dimensional virtual reality on a computer screen with interactive software may be used to solve problems in a cardiac clinical situation (Gomoll, Kelton, Priebe, Dempster & Marcus 2008; Tsai, Chai, Hsieh, Lin, Taur, Sung & Doong 2008).

## **1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM**

The nursing college where this study was conducted is one of the accredited public nursing education institutions in the Gauteng Province of South Africa. One of the programmes offered at this college is the 4 year basic programme of education and training leading to registration as a nurse (general, psychiatric and community) and a midwife (R425) (South African Nursing Council 1985:paragraph (ii)). Simulation learning is embedded within the curriculum of this programme at all levels.

Integrating simulated learning into a basic nursing programme requires that particular attention be given to the stage or level of training and the appropriateness of the skills related to the students' development needs.

With regard to the second-year student nurses in the programme at the college where the study was conducted, each student must complete 1000 clinical hours including 40

hours of simulation training. Simulations are used for the new procedures that need to be learnt in that year of training before students are placed in the clinical placement areas.

Simulations are used as follows:

- The students are given information about the use of simulation at the beginning of the second level academic year during orientation into the second year teaching-learning programme.
- Simulation training occurs in the simulation laboratory with the use of low and medium fidelity mannequins, facilitated by a total number of lecturers of six (6) for approximately 200 second level students. The laboratory is set up according to nine stations in 6 venues.
- Eight skills are taught and practiced in the six (6) venues.
- Care is taken to set up each station to mimic a real situation in a clinical setting according to the procedure to be practiced.
- The students are divided into two groups, the first group have their training the first week of simulation training and the other group in the week that follows. The duration of simulation training for each group is 40 hours.
- Each group is then divided into six (6) groups of approximately 16 to 17 students in each group. Each group is rotated twice in the day and two (2) to three (3) procedures are taught daily in the allocated venue.
- Each group is allocated approximately 4 hours for the instruction and practice of the skill in a number of group of related activities.

Simulation at the college is implemented following the guidelines by O'Connor (2015:150), which state that during a simulation session the facilitator should:

- Teach one procedure/skill at a time.
- Give a general introduction of the skill, pointing out the theory and principles involved with the activity.
- Demonstrate the skill for the students using a mannequin and after the instructor's demonstration, students practice the skill.
- Observe their performance, offering suggestions and corrections and answering questions.

- Give feedback during and after the demonstration for students to learn from their mistakes without causing any danger to the patient.
- When the students feel comfortable with the skill, or when each student has correctly repeated the instructors demonstration, the instructor moves to the next skill to be covered that day.

### **1.3 RESEARCH PROBLEM**

Simulation has been used at the college where the study was conducted for a number of years but little is known formally about the student nurses' experiences of teaching and learning through simulation. Having been involved in the teaching of second level student nurses using simulation for the past two years, the researcher was concerned about the adequacy of clinical performance in a simulated learning environment given the large number of students (200), number of skills to be taught (8) in 40 hours and the small number of lecturers (6) involved in simulation teaching. The researcher's interest was the student nurses' experiences, as feedback and a measure of performance on the implementation of simulation teaching at the college, in order to improve simulation teaching learning outcomes.

### **1.4 AIM OF THE STUDY**

The aim of study was to explore and describe the student nurses' experiences of teaching and learning through simulation.

#### **1.4.1 Research objectives**

In order to accomplish the aim of the study, the following objectives were formulated, namely to

- describe the knowledge that student nurses gained from teaching and learning through simulation
- describe the skills that student nurses acquired from teaching and learning through simulation
- explore and describe the student nurses' attitude towards teaching and learning through simulation



- describe the challenges associated with teaching and learning through simulation from the student nurses' perspective

#### **1.4.2 Research questions**

The study sought to provide answers to the following research questions:

- What knowledge did student nurses gain from being involved in teaching and learning through simulation?
- What skills did student nurses acquire from their involvement in teaching and learning through simulation?
- What was the student nurses' attitude towards teaching and learning through simulation?
- From the student nurses' experiences, what were the challenges associated with teaching and learning through simulation?

### **1.5 SIGNIFICANCE OF THE STUDY**

The findings of this study will contribute to the body of knowledge on student nurses' experiences of teaching and learning through simulation in nursing education. In addition, the findings provided the college with the necessary feedback as a performance measure of teaching and learning through simulation in order to achieve the desired simulation learning outcomes.

### **1.6 DEFINITION OF TERMS**

The following key concepts were identified as central to this study: ...

#### **1.6.1 Clinical Laboratory**

Clinical laboratories resemble real clinical facilities in which students are able to acquire clinical skills through simulation (Kaakinen & Arwood 2009:1). The clinical laboratory referred to in this study is situated at the nursing college where the study was conducted.

### **1.6.2 Experiences**

According to *Oxford school Dictionary* (2010:215), experience refers to what one learns from doing or seeing things. Burns and Grove (2009:9) state that personal experience is the knowledge that comes from being personally involved in an event, situation, or circumstance. For the purpose of this study, experiences refer to the knowledge, skills and attitudes that nursing students acquired from being involved in teaching and learning through simulation. Experience also refers to the challenges experienced because of personal participation in teaching and learning through simulation.

### **1.6.3 Learning**

Learning is an enduring change in behaviour, or in the capacity to behave in a given fashion, which results from practice or other forms of experience (Oermann 2015:16).

### **1.6.4 Simulation**

According to *Oxford School Dictionary* (2010:552), to simulate is to imitate certain conditions that exist in real life using computers or models, usually for training or study purposes. Simulation as used in this study referred to controlled and risk free encounters replicating and reflecting clinical practice as closely as possible to allow student nurses to learn, practice and apply nursing skills before transferring these to clinical practice (Morgan 2006:3). It takes place in the clinical laboratory at the college using mannequins.

### **1.6.5 Student nurse**

A student nurse is a person undergoing education and training in basic nursing at an accredited institution that has complied with the prescribed standards and conditions for education and training (South Africa 2008:5). For the purposes of this study, student nurses referred to the second level student nurses registered for the basic programme of education and training leading to registration as a Nurse (general, psychiatric and community) and a midwife (R425) (South African Nursing Council 1985:paragraph (ii)) at one selected college where the study was conducted.

### **1.6.6 Teaching**

According to Mellish, Brink and Paton (2011:376), teaching involves developing the knowledge, skill, mind, character, or ability of others, it 'means not only transmitting knowledge but transforming and extending it as well'. Teaching stimulates 'active, not passive, learning and encourages students to be critical, creative thinkers, with the capacity to go on learning.

## **1.7 THEORETICAL FOUNDATIONS OF THE STUDY**

The theoretical foundations of the study are presented in the paragraphs that follows.

### **1.7.1 Research paradigm**

A paradigm is a worldview or a general perspective on the world's complexities (Polit & Beck 2014:6). Brink, Van der Walt and Van Rensburg (2012:25) further explains that a paradigm is a way of looking at natural phenomena that encompasses a set of philosophical assumptions and that guides one's approach to enquiry. The study was informed and guided by positivist or quantitative paradigm, which is based on the belief in universal laws and objective reality. In positivism, the researcher is concerned about facts, measurable behaviour as well as cause-and-effect and believes in the existence of a social and physical reality 'out there' that is driven by natural laws as well as the appropriate ways of going about finding knowledge (Burns & Grove 2012:23; Brink et al 2012:25; Polit & Beck 2012).

#### ***1.7.1.1 Assumptions on which the study was founded***

Assumptions are statements taken for granted or considered true, even though they have not been scientifically tested (Burns & Grove 2009: 688). The study was founded on the following assumptions:

- Teacher behaviour is modifiable by the feedback devices used in simulation teaching.
- Everyone participating in teaching and learning through simulation cares about doing their best and wants to improve.

- The participants are autonomous people who will share information willingly and will give honest responses to the questionnaires.

### **1.7.2 Theoretical framework**

Theory is a set of concepts linked through proposition to provide an explanation of a phenomenon. Theoretical framework is the structure of a study that links the theory concepts to the study variables (Schmidt & Brown 2015:134-139). Benner's philosophy of clinical wisdom in nursing, the novice-to-expert model, formed the basis of this study. A detailed discussion of Benner's the novice-to-expert model is presented in chapter 2.

## **1.8 RESEARCH DESIGN AND METHOD**

A research design is the overall plan for addressing a research question, including specifications for enhancing the study's integrity (Polit & Beck 2012:58). It ensures that the evidence obtained is able to answer the research question as unambiguously as possible (Polit & Beck 2012:58). A quantitative exploratory and descriptive design was used to achieve the objectives of the study. The design was non-experimental in nature.

Research methods refer to the techniques used to structure a study and to gather and analyse relevant information to the research question in a systematic fashion (Polit & Beck 2012:12). A detailed discussion of the research design and methods used in this study is presented in chapter 3.

## **1.9 SCOPE OF THE STUDY**

The aim of the study was to provide information on student nurses' experiences of teaching and learning through simulation. Student nurses at one college of nursing in the Gauteng province of South Africa were used.

## **1.10 STRUCTURE OF THE DISSERTATION**

The study report was organised into the following five (5) chapters:

Chapter 1: Orientation to the study

Chapter 2: Literature review

Chapter 3: Research design and method

Chapter 4: Analysis, presentation and description of the research findings

Chapter 5: Interpretations, conclusions, limitations and recommendations of the study.

## **1.11 CONCLUSION**

The chapter focused on the background and motivation of the study. The research problem, research purpose and objectives of the study were introduced. The significance and purpose of the study were stated. Operational terms used in the study were defined and the theoretical framework that guides this study was introduced. The researcher briefly outlined the structure of the dissertation and the scope of the study. Chapter 2 focuses on the literature review.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

The purpose of this chapter is to present the results of a literature review relevant to teaching and learning through simulation. The literature review was done to broaden the researcher's knowledge base on the uses, benefits, challenges and emerging trends in teaching and learning through simulation. It was also conducted to identify, summarise, synthesise what has been studied previously, and help sharpen the focus of the research question (Schmidt & Brown 2015:95). In addition, the literature review was undertaken to identify appropriate methods for the study, point to an appropriate theoretical framework that would help the researcher interpret the findings of the study (Polit & Beck 2012:116).

#### **2.2 SCOPE OF THE LITERATURE REVIEW**

A computer-assisted search was conducted in the cumulative index of nursing and allied health literature (CINAHL), the national library of medicine (PubMed) service, UNISA repository and ebscoshost databases using the key words simulation, teaching and learning. The reviewed literature included research conducted globally and within South Africa from 2007 to 2017. The researcher conducted the literature review to evaluate the current practices and available knowledge about student nurses' experiences of simulation training in nursing education from relevant journals, books, articles, research reports, dissertations and policy documents.

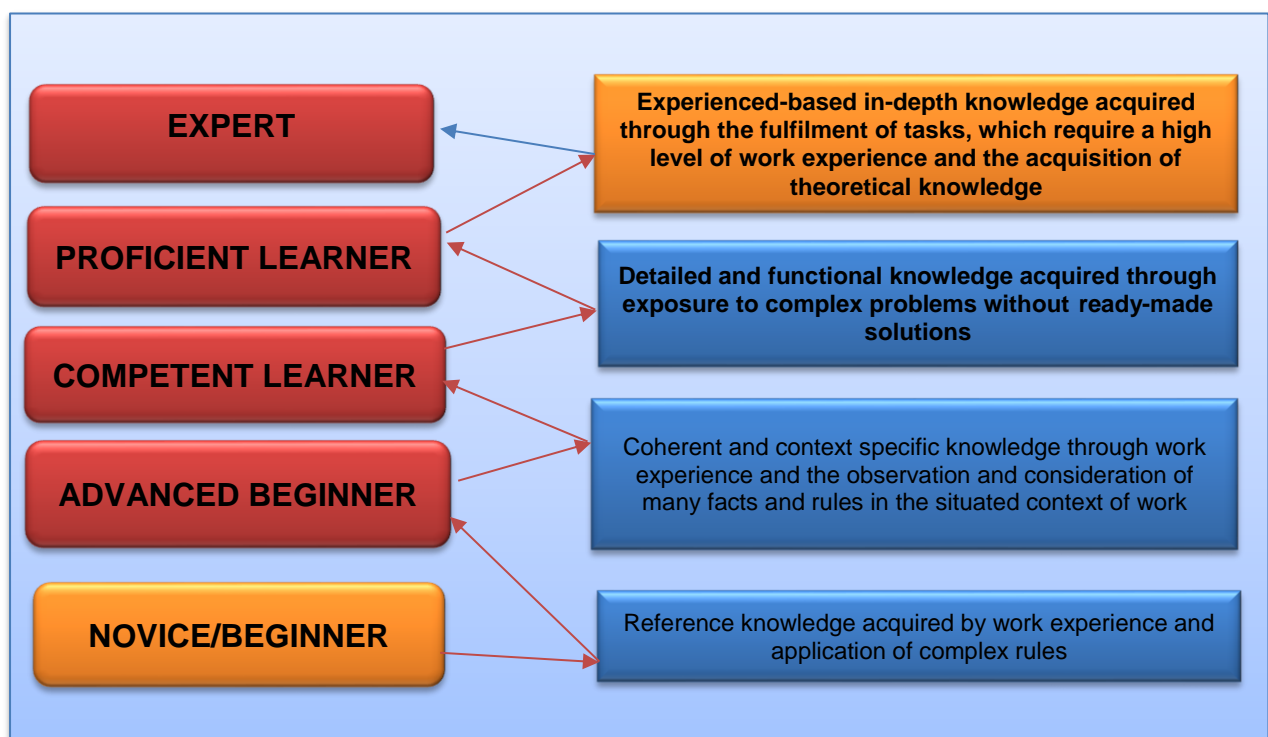
#### **2.3 LITERATURE REVIEW**

The results of the literature review are presented using the headings, theoretical framework and its relevance to the study, as well as its application to nursing education, simulation types, uses, benefits, challenges and standards of best practices in simulation teaching and learning.

### 2.3.1 Theoretical framework: Benner's novice-to-expert

Benner's novice-to-expert model formed the theoretical framework on which the study was based. Patricia Benner introduced the model that conceptualised the framework for understanding skills acquisition by delivering a comprehensive and holistic framework for assessing nurses' needs at different stages of professional growth. The model proposes that expert nurses develop skills and understanding of patient care over time through a proper educational background and experience (Masters 2015: 63). According to Benner, Tanner and Chesla 2009 cited in Dorsey (2014:2), the model depicts the characteristic changes witnessed as nurses develop within the nursing practice.

Benner asserts that nurses progress through the nursing discipline in developmental stages and describes the importance of acquired knowledge as it relates to nursing practice (Dorsey 2014). The model describes in five steps, the stages of skill acquisition as applied in nursing. The five steps of skill acquisition identified by Benner include novice, advanced beginner, competent, proficient, and expert (Masters 2015:63) as shown in figure 2.1.



**Figure 2.1 Benner's stages of skills acquisition**

(Adapted from Rauner 2002)

### ***2.3.1.1 Stages of skills acquisition***

#### *Novice*

A novice nurse is a beginner who has no practical experience of how to apply new knowledge and skills in unique situations. The novice stage behaviour is guided by newly learned rules that are theoretical in nature and the nurses at this stage use general rules in a context-free, inflexible, linear manner (Thomas & Kellgren 2017:229). According to Benner et al (2009) (in Thomas & Kellgren 2017:229), the performance of novice nurses is limited because, following linear rules impedes the ability to identify the most relevant tasks to perform in various situations. It is difficult for the beginner nurse to see the entire clinical situation and to discern between relevant and irrelevant features of a situation. Dorsey (2014:2) explain that novice nurses are generally concrete thinkers, they need guidance, seek reassurance from experienced staff when performing tasks, and follow the blueprint of practice exactly how it is outlined. Through instruction, the novice learns the rules for drawing conclusions or for determining actions based on features of the situations that are recognisable, without the benefit of experience in the skill domain being learned (Masters 2015:63).

#### *Advanced beginner*

According to Benner, familiar clinical situations affect the characteristics of the advanced beginner. Different patient experiences have shaped the advanced beginner's perception and expanded their foundation of knowledge. They are learning to take in and process information based on recurring clinical situations. The performance of the advanced beginner starts as a nurse begins to use intuition, based on previous experience to recognise patterns and contexts of unique situations (Thomas & Kellgren 2017:230). The learner at this stage demonstrates a marginally acceptable level of performance after having experienced coping with real situations (Masters 2015:64). The focus is on tasks to be completed and routines to be followed. There is limited connection to patient needs and task management. Theoretical understanding has been enriched by practical experience, but there is still a reliance on theory as a guide to practice (O' Connor 2015:105). Advanced beginners use principles, checklists, experience and intuition to apply learned rules that guide actions.



### *Competent nurse*

The nurses who reach this stage move away from concrete thinking toward an analytical and abstract reasoning. They begin to recognise patterns and are able to discern features of a situation that require attention. Competent-level performance is marked by the ability to prioritise and utilise aspects of situations that are most relevant. Thinking is more conscious, abstract, and analytic in nature (Thomas & Kellgren 2017:230). In addition, a sense of responsibility occurs as consequences of chosen action and performance shortcomings are recognised (Benner et al 2009 in Thomas & Kellgren 2017:230; Masters 2015:64). The competent nurse devises new rules and reasoning procedures for a plan while applying learned rules for action on the basis of the relevant facts of the situation (Benner 2014:6). This level of skill is not achieved by the amount of time of being a nurse, but practicing in the same clinical area over a period of time. Dorsey (2014) point out that greater efficiency is attained by gaining a better perspective of the collective needs of the patient. This allows for better planning to achieve goals and desirable outcomes.

### *Proficient nurse*

Nurses at the proficient stage of performance have a better understanding of the clinical picture; they look at the situation holistically and can recognise the changing relevance of variables as the situation unfolds (Thomas & Kellgren 2017:230). Practice is reflective of analytical perception of clinical situations (Stuart 2013 in Dorsey 2014). This level of function allows the nurse to individualise care, based on specificity of the patient's needs. Proficient nurses think critically and make sound decisions based on the combination of skill and intuition. The proficient nurse demonstrates increased confidence in her/his abilities and can turn the focus away from self but toward the patient. Proficiency is marked by less time and energy spent in thinking and planning; proficient nurses simply know what needs to be done. They know what to expect in certain situations and continually modify care based on changing circumstances (Benner 2014:7).

### *Expert*

Benner regards the expert stage as the highest level a nurse can achieve in clinical practice development. Benner's interpretation at the expert phase, describes the nurse as deeply connected with the clinical situation with practice intuitively driven, reflecting a high level of proficiency (Masters 2015:64). Information is processed, critical data is considered

according to priority and interventions implemented are based on a strong foundation of knowledge from years of experience. The expert nurse is unique to the nursing discipline, accounting for variables in clinical situations and exercising flexibility while providing care. The expert operates from a deep understanding of the total situation (Benner 2014:8; Masters 2015:64).

### ***2.3.1.2 Assumptions and propositions of Benner's philosophy***

Benner based her assumptions on metaparadigms of nursing, person, health, and situation. The different phases of nursing development all intertwine at a level of caring. This component is essential to the progression of nurses through the developmental stages. Caring is embedded within the profession of nursing and is significant in guiding patient care (Dorsey 2014). Benner asserts, "Knowledge is a prerequisite for expertise", meaning that Benner considers experience as a prerequisite for becoming an expert and makes a difference in the nurse that "knows that" and "knows how" (Benner 1984). Exposure to similar situations, builds on last experience, empowering skill confidence. She describes the importance of acquired knowledge as it relates to nursing practice. (Dorsey 2014; Masters 2015:63).

According to the model, the acquisition of knowledge is strengthened through reflection, which must be combined with the use of narratives, as nurses often know more that they can communicate (Benner 1984). In addition, Benner proposes that the expert nurse is the one who uses intuition based on unique attributes obtained from experience, self-awareness and reflection.

### ***2.3.1.3 Relevance of novice-to-expert framework to the study***

The study focused on the advanced beginner, namely 2<sup>nd</sup> year student nurses who have been exposed to different patient experiences that have shaped their perception and expanded their foundation of knowledge. Advancing from this stage of development to the next (competent nurse) is based on the frequency and type of experiences, as well as the guided reflection and education provided by nurse educators. Second year student nurses have gained enough experience that they start to intuitively recognise situational elements that are relevant

In order for the advanced beginner to continue to grow in the role and advance to the next stage of competent nurse, Kelly, Berragan, Husebo and Orr (2016:319) recommend that, nurse educators should provide clinical experiences during simulations that are capable of changing the student nurses' capacity to act in complex situations. In addition, nurse educators have to design simulation scenarios that are informed by relevant pedagogic frameworks to ensure a solid foundation for learning experiences that have meaning and high impact on patient care.

At the nursing college where the study was conducted, simulation is applied as a pedagogical method for learning multiple nursing skills and it is assumed that it is student-centred, interactive and beneficial in preparing the student nurses for real world patient care and experiences.

The experiences of 2<sup>nd</sup> year student nurses were important for the researcher because they provided feedback to the college about the extent to which simulation as used for second year student nurses' achieved growth in the advanced beginner stage and transformation from advanced beginner to competent nurse. The model was used in this study for interpretation of study findings.

#### ***2.3.1.4 Application of Benner's model to simulation in nursing education***

Although Benner's model was originally proposed for the nurse in practice, it has been used in diverse nursing educational settings. A number of authors have described the application of Benner's model in clinical teaching using simulation (Cant & Cooper 2010; Cummings, Docherty, Iacovella & Singh 2010; Dorsey 2014; Kelly et al 2016). Waldner and Olson (2007) combined the first three stages of Benner's theory with Kolb's theory of experiential learning to provide a framework for using high fidelity patient simulation in nursing education. Thomas and Kellgren (2017:230) conducted a study on the application of Benner's novice to expert model to simulation facilitator development in practice settings. The same authors concluded that outlining the challenges and opportunities at various levels of facilitator development provided direction for infrastructure and the support needed at the various levels for efficient and effective facilitator preparation for implementing simulation.

Dorsey (2014) supports the use of the foundation of Benner's novice to expert theory in educational advancements. The same author indicates that the teaching-learning experience in simulation laboratories offer a reflective learning experience that assists in the practice and knowing growth for nurses. According to Benner's theory, nursing instructors can use simulators to facilitate the progress of gaining clinical competencies among nursing students (Neil 2009). In clinical education, simulators can be of various forms, including written form, simulated patients and role-playing. Weaver (2011) points out that simulators are strong, efficient tools which can be used in the novice and advanced beginner steps for providing nurses with the required skills.

According to Dorsey (2014), Benner's philosophy supports lifelong learning for nurses. The same author further explains that the utilisation of the theoretical framework directs education and graduate nursing programs can be enhanced by referencing Benner's theory.

### **2.3.2 Simulation as a teaching learning strategy in nursing education**

According to Waxman (2010), simulation has been used in nursing education for the past 15 years. However, Jeffries, Dreifuert, Kardong-Edgren and Hayden (2015) note that nursing education programs are increasingly integrating simulation into their curricular to optimise clinical experiences. Kelly et al (2016:312) attribute the high attraction to the use of simulation as a teaching strategy in nursing education to the continued decrease in access to traditional clinical experiences, as well the need to incorporate multiple nursing skills. The National Council of State Boards of Nursing (NCSBN) released the findings of a multi-site study on the efficacy of simulation as a substitute for traditional clinical experience on nursing students' success rates in course work, licensure exam results and readiness for practice (Hayden, Smiley, Alexander, Kardong-Edgren & Jeffries 2014). The results of that study showed that varying levels of traditional clinical experiences were replaced with simulation activities, with the highest level of replacement at 50%. Hayden et al (2014) concluded that simulation that replaced up to 50% of clinical time was statistically as effective as traditional clinical experience on their measured outcomes. Ackerman (2015) corroborates this view by stating that simulation can be used as a substitute for clinical hours provided the standards of best practices in simulation such as those published by the International Nursing Association of Clinical Simulation and Learning are implemented. The same author further

recommend that trained, dedicated faculty should facilitate simulation experiences and incorporate educational theories into the debriefing process.

There is a plethora of studies on the use of simulation as a teaching learning strategy in nursing education, particularly within the undergraduate nursing curricular. Simulation in nursing education is used for a variety of evidence-based reasons. Research has shown that simulation-based training can improve student learning and therefore patient care (National League for Nursing 2011). With the current focus on patient safety and quality of patient care, it is important for the nurse educators to incorporate learning techniques into the curriculum that will enhance the knowledge of the students and provide opportunities for students to be involved in patient experience before they have the experience at bedside (Solnick & Weiss 2007 in Logan 2012:474-481). Simulation presents an opportunity for student nurses to begin to learn and develop a nursing “habitus”, enabling them to rehearse the “skilled know how” required for competent practice (Kelly et al 2016:312) and to practice what has been learned in lectures and skills laboratories in a safe, controlled environment that enables nurse educators to recreate real life situations.

According to Humphreys (2013:363), simulation is a major teaching strategy for developing, practicing and assessing skills, knowledge, attitudes and meaningful decision-making within the field of nursing. Cant and Cooper (2010) and Ricketts (2011) further explain simulation as a dynamic curricular development and a method to develop deeper learning. Simulation can be used as a teaching strategy, clinical practice for nurses and as an evaluation process. It helps to incorporate multiple elements of practice within a learner-centred activity and triggers participants’ reflection on and about nursing practice. Sharma (2017:02) describes simulation as a strategy that mirrors, anticipates or amplifies real situations with guided experiences in a fully interactive way. Furthermore, situations that cannot be seen in clinical area can be created because with the use of simulation, clinical experiences can be replicated on college campuses and laboratory settings. A summary of the uses and benefits of simulation is presented in the paragraphs that follows.

- Simulation has become an established pedagogy for clinical nursing skills, offering students the opportunity to learn fundamental nursing skills in a safe environment, which closely represents reality. It enables nurses to develop, synthesise and

apply their knowledge in a replica of real experience (Berragan 2013; Cant & Cooper 2010:13). Simulations are used to enhance educational objectives and outcomes through hands on approach in a safe environment (National League for Nursing 2011). Students can therefore practice safely, competently and confidently.

- The role of feedback in simulation is emphasised (Levett-Jones & Lapkin 2012).
- Bland, Topping and Wood (2011) and Robinson and Dearmon (2013) accept the active nature of learning which is offered through simulation.
- The theory-practice gap is a recurring narrative in the nursing literature and the findings of the study by Hope, Garside and Prescott (2011) recognise that simulation offers an opportunity to enact the integration of theory and practice illuminating this relationship in a controlled environment thus, reinforcing the theory-practice relationship for nursing students. Simulation allows integration of knowledge, skills and attitudes to take place as well as filling of gaps in learning.
- Simulation promotes the development of self-reflection, decision-making and critical thinking through techniques such as role-playing and the use of devices such as interactive videos or mannequins (National League for Nursing 2011).

Simulations are therefore intended to enhance the clinical education experience and they are designed to complement the clinical and classroom experiences.

### **2.3.3 Nurse educators as facilitators of simulation teaching and learning**

The specialty of simulation facilitator is relatively new for nurse educators and the simulation facilitator development continues to advance in nurse education (Thomas & Kellgren 2017:227). However, many nurse faculty members report having no formal faculty development plan. Although simulation provides educators with new educational opportunities, the potential use of simulation in competency testing cannot be achieved until educators and researchers acquire the knowledge and skills needed to use this education strategy effectively, develop realistic case scenarios, and design and validate standardised and reliable testing methods (Decker, Sportsman, Puetz & Billings 2008).

Anderson, Bond, Holmes and Cason (2012) conducted a survey on simulation nurse educators regarding their simulation experience and ability. The researchers found that two-thirds of nurse educators rated themselves as proficient in using simulation methods

and linking simulation to the curriculum even though no definition of proficiency was provided. The same authors concluded that, as simulation use is expanding, there is a need for a model to advance the practice of simulation facilitators using common terminology, definitions, goals, and theory to guide growth toward consistent successful educational outcomes.

Jones, Reese and Shelton (2013) investigated the teacher-construct within simulation and found significant inconsistencies in the use of terms. The same authors recommended that the use of the term *facilitator* be used to provide direction and further best practices. The International Nursing Association for Clinical Simulation and Learning (INACSL) (2016) has published *Standards of Best Practice: Simulation* and definitions to enhance communication and provide evidence-based guidelines for implementation and training. Accordingly, as simulation continues to grow, the terminology on which it is built has to grow.

According to the Society for Simulation in Healthcare [SSH] (2012), simulation facilitator competencies have been developed and are the basis for certification for nurse facilitators. The SSH (2012) state that the Benner's model provides a pedagogical foundation for planning and implementing facilitator development. However, time and training are significant obstacles for implementing simulation in nurse education programs (Anderson et al 2012; Jansen, Johnson, Larson, Berry & Brenner 2009).

Thomas and Kellgren (2017:227) point out that, as with most new techniques, there are innovators and early adopters implementing simulation techniques with others embracing the technique after it became more readily accepted. Therefore, the use of simulation currently has educators who are well versed in simulation and many others just beginning.

Schools of nursing struggle with how to organise faculty development programs for the various levels of simulation expertise (Waxman & Telles 2009). It became clear that a more detailed framework that provides structure to build a programme for faculty development needed to be established. Time and training are significant obstacles for implementing simulation in nurse education programs (Anderson et al 2012; Jansen et al 2009). It may not financially feasible to provide formal training for all faculty members at the same time, which can lead to varying levels of knowledge and skills within a group of educators. With

more interest in simulation, methods, and pedagogy, there is a need for faculty development programmes.

### **2.3.4 Types of simulation**

The types of simulation described in literature is categorised according to its modality, for example standardised patients, mannequins, part or partial trainers or screen-based simulation (Cook, Hatala, Brydges, Zendejas, Szostek, Wang, Erwin & Hamstra 2011:978-988; Motola, Devin, Chung, Sullivan & Issenberg 2013:e1511-e1530). However, Choi, Dyens, Chan, Schijven, Lajoie, Mancini, Dev, Tsai, Ferland, Kato, Lau, Montonaro, Pineau and Aggarwal (2017:S23) point out that method of classifying the types of simulation according to modality only is not sufficient to accurately describe what any particular simulation activity will entail. This, according to the same authors will prevent nurse educators from properly recognising the different dimensions of a simulation and only considering mannequin or standardised patient thereby unable to fully engage the needs and requirements of the learner, and ultimately the individuals for whom they care.

Choi et al (2017) describe any simulation activity as having a scope, modality and environment. The scope refers to the extent of the clinical encounter involved in simulation, which may include one or more modalities and be set in one or more environment. The choice of the scope depends on the goals and objectives of the simulation as set by the nurse educator. Examples of the scope include:

- A specific skill such as administration of intramuscular injection
- Patient scenario

Modality refers to the simulator, which facilitate different scopes of simulation and can be used in a variety of environments. Types of modality include;

- Task or procedure trainers
- Mannequins, which may be used to represent a patient
- Standardised patients, which are trained actors
- Computer-based simulation



- Mixed modality: combining multiple modalities into the same simulation. For example, designing a scenario where the learners begin by taking the history on a standardised patient, perform the physical examination on a mannequin that represents the same patient, and performs the procedure on a task trainer or in virtual or augmented reality.

Simulations are carried out either in the same environment as the actual clinical setting, such as the ward or in a simulation or skills laboratory. A skills laboratory is designed to simulate the clinical setting and to be a non-threatening place for the development of knowledge, skills and attitudes that are foundational to clinical practice (Oermann & Gaberson 2014:119). The facilitation of learning requires setting of an environment conducive to learning, including interaction between lecturer and student in a challenging but non-threatening environment (Quinn & Hughes 2014:117). Skills laboratory provides a safe environment for initial psychomotor skills acquisition while offering opportunities to socialise students into the professional role.

Teaching within the skills laboratory combines the best of traditional methods of instruction with the new technology advances. Regardless of the complexity of the skill, the student begins practice in the skills laboratory on low fidelity mannequins. In addition, the students can be provided with kits of equipment and supplies to continue practice at home. Skills can be embedded within a scenario accompanied by the complexity of care based on the course objectives. One student performs the skill, while other students actively participate in the skill through discussion and support. The skills laboratory is an essential environment to teach nursing skills, it provides an enriched teaching and learning atmosphere that encourages active and involved exploration and mastery of new knowledge and skills to develop competent nurses (Bradshaw & Lowenstein 2014:234).

In the protected environment of the skills laboratory, students learn, make mistakes, question conceptual ideas, practice psychomotor skills, and expand knowledge to a new level of understanding. Students learn by doing through experimentation that would be impossible and dangerous in direct patient care situations. (Bradshaw & Lowenstein 2014:234).

Most college skills laboratories are designed to simulate the hospital setting, with hospital beds and bedside furniture, curtain partitions, and equipment and supplies similar to those

in the clinical setting. Ideally, the laboratory will have sinks with running water. Cabinets and drawers generally labelled with their contents. Bed linen, hospital gowns and standard bedside items, such as the bedpan, urinal, washbasin, and emesis basin. Mannequins of varying complexity and anatomical models usually are available. Disposable supplies such as dressings, wound care kits, tubing, needles, syringes, and the like, often are available. Most supplies are reused throughout the simulation period and replenished at the start of a new simulation programme (O' Connor 2015:147-148).

There are however disadvantages that must be borne in mind when simulation is used. Bradshaw and Lowenstein (2014:205) point out the high costs associated with simulation in respect of the initial setting it up and the maintenance of the simulation laboratory. Parker and Myrick (2008) further explain that simulation is time intensive because the process of preparing it is time consuming and there is a need for additional laboratory assistants. In addition, nurse educators are often faced with large number of student nurses and limited human and material resources, thus compromising the learning potential of simulation.

Virtual environments, using digital simulation as a modality can offer a variety of environments. Virtual simulation represents the latest innovation towards the future of nursing education. Virtual hospitals and patients can be used to allow learners to practice decision-making and prioritisation of tasks in a safe environment and within a variety of contexts.

The primary drivers of simulation education are patient safety and consistency of skill application, which can be difficult to achieve in traditional nursing programs. Faculty leaders need to shift focus to adopting technology that aligns with and supports the learning outcomes that the programme hopes to achieve and integrating new technologies with simulation to enhance student learning.

### **2.3.5 Standards of best practices in simulation**

The International Nursing Association of Clinical Simulation and Learning (INACSL) (2016) published the first set of simulation standards in 2011 and added more guidelines in 2013 and 2015. The standards reflect best practices in health science education, in particular simulation. They provide the foundation of decisions and actions defined by

shared values, beliefs and principles. The INACSL standards for simulations include rationale (justification for the development of a standard), outcomes (intended results of adhering to the standard), criteria (parameters or attributes necessary to meet the standard) and guidelines (procedures or principles that are used to assist in meeting the standard). Integrating these standards will enhance learning outcomes and efficiency.

A brief description of the simulation best practices standards is presented in the paragraphs that follow.

- **Standard I: Terminology**

Consistent terminology provides guidance and clear communication and reflects shared values in simulation experiences, research and publications. Knowledge and ideas are clearly communicated with consistent terminology to advance the science of simulation. According to Meakim, Boese, Decker, Franklin, Gloe, Lioce, Sando and Borum (2013), standardised terminology enhances communication and understanding among planners, participants and others involved in simulation based experiences. Terminology is descriptive and consistent in a variety of settings, written documents and publications. (Meakim et al 2013).

- **Standard II: Professional integrity of participants**

The simulation learning, assessment and evaluation environments will be areas where mutual respect among participants is expected and supported. Professional integrity is related to confidentiality of the performances and scenario content. Participant experiences is required during and after any simulation experience. Confidentiality is expected in live, recorded or virtual simulation experiences (Gloe, Sando, Franklin, Boese, Decker, Lioce, Meakim & Borum 2013).

- **Standard III: Participant objectives**

All simulation experiences start with the development of clearly written participant objectives, which are available, prior the simulation experience. The objectives should address all domains of learning, correspond with participants' level of knowledge, remain congruent with the overall programs outcomes, incorporate evidence-based practice and

be achievable within an appropriate timeframe (Lioce, Reed, Lemon, King, Martinez, Franklin, Boese, Decker, Sando, Gloe, Meakim & Borum 2013).

- **Standard IV: Facilitation**

Multiple methods of facilitation are available and use of a specific method is dependent on the learning needs of the participants and the expected outcomes. Facilitation methods used should be congruent with simulation objectives and expected outcomes. The facilitation focuses on the individual participants, considers cultural, experience and the level of the learner (Franklin, Boese, Gloe, Lioce, Decker, Sando, Meakim & Borum 2013).

- **Standard V: Facilitator**

A proficient facilitator is required to manage the complexity of all aspects of simulation. The facilitator has specific simulation education provided by formal course work, continuing education and targeted work with an experienced mentor. The facilitator clearly communicates objectives and expected outcomes, creates a safe environment that supports and encourages active learning, repetitive practice and reflection, promotes and maintains fidelity and uses facilitation methods to the level of participants' learning and experience. The facilitator assesses and evaluates acquisition of knowledge, skills, attitude and participants' behaviour, models professional integrity and provides constructive feedback and facilitates debriefing of participants aimed towards promoting reflective thinking (Boese, Cato, Gonzalez, Jones, Kennedy, Reese, Decker, Franklin, Gloe, Lioce, Meakim & Borum 2013).

- **Standard VI: Debriefing**

All simulation-based experiences should include a planned debriefing session aimed toward promoting reflective thinking. A competent person in the process of debriefing who observes the simulated experience facilitates debriefing. It is conducted in an environment that supports confidentiality, trust, open communication, self-analysis and reflection and it is based on a structured framework for debriefing (Decker, Fey, Sideras, Caballero, Rockstraw, Boese, Franklin, Gloe, Lioce, Sando, Meakim & Borum 2013).

- **Standard VII: Evaluation/Participant assessment**

In a simulation-based experience, formative and summative assessment can be used. Formative assessment fosters personal and professional progress towards achieving objectives while summative assessment focuses on the measurements of outcomes or achievements of objectives (Sando, Coggins, Meakim, Franklin, Gloe, Boese, Decker, Lioce & Borum 2013).

- **Standard VIII: Simulation - enhanced interprofessional education (SIM-IPE)**

Simulation- enhanced interprofessional education occurs when participants and facilitators from two or more professions are engaged in a simulation health care experience to achieve outcomes. It is designed for the individuals involved to “learn about, from and with each other to enable effective collaboration and improve health outcomes”. Simulation based experiential learning is recognised as an effective way to promote interprofessional education teamwork (Decker, Anderson, Boese, Epps, McCarthy, Motola, Palaganas, Perry, Puga, Scolaro & Lioce 2015:293).

- **Standard IX: Simulation design**

Simulation based experiences should be purposefully designed to meet identified outcomes (Lioce, Meakim, Fey, Chmil, Mariani & Alinier 2015:309). Jeffries (2007 in Logan 2012) describes the simulation design as having five features, namely objectives, fidelity, problem solving, student support and reflective thinking (debriefing). The same author further explain that the amount of each feature included in simulation depends on the purpose of the simulation.

### *Objectives*

Objectives should be realistic and should reflect the intended outcome of the simulation, specify expected learner behaviors, and include enough information for the learner to participate effectively. Once the simulation is completed, reference to the objectives can be used in the debriefing.

## *Fidelity*

It refers to the extent to which the simulation mimics reality (Mellish et al 2011:243). Fidelity or realism allows the learner to become engaged within the simulation on physical, conceptual, emotional, and experiential level. The three levels of fidelity are high, moderate, and low. A high-fidelity simulator is a full size, interactive, realistic mannequin that can be programmed to demonstrate the signs and symptoms of an illness a patient may be experiencing in a problem-based scenario.

In developing a high-fidelity simulation, the real-life situation should be replicated as closely as possible (Jeffries 2007; Oermann & Gaberson 2014:83-84). High fidelity manikins use realistic materials, techniques and devices that represent the activity the students must perform, and that respond to the students' actions performed. An example of such manikin is the SimMan used for teaching advanced life support (Oermann & Gaberson 2014:84). Two-dimensional virtual reality on a computer screen with interactive software may be used to solve problems in a cardiac clinical situation (Gomoll et al 2008; Tsai et al 2008).

Medium fidelity simulators offer a more realistic reproduction of a clinical situation and provide some feedback to the student. Example is a mannequin that produces heart and lung sounds, but does not offer the realism of chest movement (Gaberson, Oermann & Shellenbarger 2015:190). Low fidelity human patient simulators (HPSSs) is task trainer that are static and typically represent one function of the human body, such as an arm model used to practice venepuncture (Oermann 2014:84). Low fidelity manikins use techniques and devices that allow limited interaction and they do not respond to students' actions; they are just reproduction of real objects that resemble humans in terms of weight and flexibility. Educators use low fidelity manikins in the skills laboratory but they do not enhance active learning as compared to high- fidelity simulation (Oermann 2014:84). An example is static manikins.

The decision about what level of fidelity to use is the responsibility of the educator and it depends on what is available, the objectives of the simulation and the intended learner outcomes.

### *Problem solving*

This feature of simulation relates to its complexity, which needs to be based on the knowledge and skill level of the students. A complex simulation should be at a level that is challenging but attainable for the learner.

### *Student support*

The support feature of the simulation design focuses on assisting the student. During the design of simulation, nurse educators should decide at what point support will be provided to the student by the facilitator. The assistance should be in the form of cues that allow the student to continue the simulation. Cues can be programmed into the simulator that voice pain, nausea and just not feeling well (Jeffries 2007 in Logan 2012). Cues like this will alert the nurse to the patient's pain with the hope that the cue will direct attention to the patient problem.

### *Reflective thinking and debriefing*

These features follow the simulation experience. The students and nurse educators examine what happened and what was learned. The session allows the students the opportunity to assess their actions, decisions and ability to deal with the unexpected (Henneman & Cunningham 2005 in Logan 2012). The same authors point out that reflective thinking and debriefing should occur immediately after the simulation so the thoughts of the students are not forgotten or distorted. The simulation guides the reflective thinking session and remarks should focus on the learning.

## **2.4 CONCLUSION**

The literature review pointed to an appropriate theoretical framework, namely Benner's novice to expert model. The literature review provided some insights of the trends and best practices in simulation as well as the use of simulation as a teaching learning strategy in the education of undergraduate nurses.

In addition, the review also identified previous studies conducted on simulation and the role of nurse educators in the simulation teaching and learning process. In the following chapter, a description of the research design and methods utilised in the study to achieve the objectives of the study is presented.



## **CHAPTER 3**

### **RESEARCH DESIGN AND METHOD**

#### **3.1 INTRODUCTION**

In this chapter, the research design and methods used for this study are discussed. The chapter begins with a discussion of the research design and methods used to achieve the objectives of the study and to provide answers to the research questions. It includes information on the research setting, population selected for the study, sampling procedures, specific method used for data collection and analysis, as well as the validity and reliability of the study. Ethical considerations related to the study are discussed in the last section of the chapter.

#### **3.2 RESEARCH PURPOSE AND OBJECTIVES**

As indicated in chapter 1, the purpose of study was to explore and describe the student nurses' experiences of teaching and learning through simulation.

##### **3.2.1 Research objectives**

The objectives for this study were to

- describe the knowledge that student nurses gained from teaching and learning through simulation
- describe the skills that student nurses acquired from teaching and learning through simulation
- explore and describe the student nurses' attitude towards teaching and learning through simulation
- describe the challenges associated with teaching and learning through simulation from the student nurses' experiences

### **3.2.2 Research questions**

The study attempted to provide answers to the following research questions:

- What knowledge did student nurses gain from being involved in teaching and learning through simulation?
- What skills did student nurses acquire from their involvement in teaching and learning through simulation?
- What was the student nurses' attitude towards teaching and learning through simulation?
- From the student nurses' experiences, what were the challenges associated with teaching and learning through simulation?

### **3.3 RESEARCH DESIGN**

A research design is the overall plan for addressing a research question, including specifications for enhancing the study's integrity (Boswell 2014; Polit & Beck 2012:58). As noted by LoBiondo-Wood and Haber (2014:164), research design specifies as clearly as possible the overall plan to be followed for obtaining answers to the research questions and for handling challenges that can undermine the study evidence. A quantitative exploratory and descriptive design was used to achieve the objectives of the study. The design was non-experimental in nature because the researcher collected data without introducing any treatment or changes to the subjects. According to Polit and Beck (2012:223), some variables although possible to manipulate cannot be manipulated for ethical reasons in human studies

#### **Quantitative research**

Quantitative research is a formal, objective, rigorous and systematic process of generating numerical information about the world (Burns & Grove 2015:32). It is conducted to describe new situations, events or concepts, examine relationships among variables and to determine the effectiveness of interventions on selected outcomes in the world. For quantitative research design, structured tools are used to generate numerical data and statistics are used to organise and interpret the data collected (Grove, Burns & Gray 2013:23-24). Quantitative research processes are objectively constructed and its

findings are replicable and generalisable. Quantitative research focuses on measurable aspects of human behaviour (Brink et al 2012:10).

### **Exploratory research**

Exploratory research is often conducted when there are few or no earlier studies to which the researcher can refer (Polit & Beck 2012:18). Burns and Grove (2015:8) further explain that explorative design is useful for clarifying concepts and for enabling researchers to compile a list of possible answers and solutions to predefined questions. An extensive literature review pertaining to teaching and learning through simulation was conducted to enhance exploration of the concepts related to the research topic. According to Polit and Beck (2012:20) exploratory research begins with identification of a phenomenon of interest followed by investigation of its full nature. The design usually involves the examination of a single sample of the study population.

### **Descriptive research**

Burns and Grove (2015:31) state that a descriptive study is designed to gain more information about characteristics within a particular field of study. Its purpose is to provide a picture of a situation in real life and an accurate account of characteristics of particular individuals, situations, or groups (Boswell 2014:206). Descriptive designs may be used to develop theories, identify problems with current practice or determine what others in similar situations are doing (Burns & Grove 2015: 31). Descriptive quantitative studies are usually conducted with a large number of subjects or study participants in natural settings. Parahoo (2014:165) further explain that the purpose of quantitative descriptive research design is to describe phenomena about which little is known. The design enabled the researcher to describe the phenomenon that was unknown, namely the student nurses' experiences of teaching and learning through simulation.

## **3.4 RESEARCH SETTING**

Research setting or context means the physical location and conditions in which data collection takes place (Polit & Beck 2012:743). It can be a natural or controlled environment. Natural settings are real-life study environments without any changes made for the purpose of the study. The study was conducted in the nursing education setting,

at one public college of nursing located in the city of Tshwane in the Gauteng province of South Africa. The place and time allocated for the study was within the teaching/learning timetable in class.

### **3.5 RESEARCH METHODS**

The research methods applied in this study comprised the description of the population selected for the study, procedures and strategies for data collection and analysis. These methods are described in the paragraphs that follow.

#### **3.5.1 Population**

According to Boswell (2014:180), a population is the entire set of elements that meet specified criteria. It is the entire aggregation of cases in which the researcher is interested (Polit & Beck 2014:303), and it comprises a particular type of individuals or elements (Burns & Grove 2015:341). The two types of populations are target and accessible populations. Target population is the entire population in which the researcher is interested in, which can be a family, community or an event while the accessible population is the portion of the target population that the researcher can reach (Boswell 2014:180). The target population for the study included all registered second year student nurses who met the set eligibility criteria.

Eligibility criteria defines the characteristics that the subject or element must possess to be part of the target population (Grove et al 2013:353). In order to be included in the study, the student nurses had to be;

- male and female student nurses studying at the selected college of nursing
- at the second-year level of training

First, third and fourth year student nurses at the selected college of nursing were excluded from the study.

### **3.5.2 Sample and sampling techniques**

A sample is a selected subset of the accessible population that represents the entire population (Polit & Beck 2012:742). A sample is said to be representative when its main characteristics closely approximate those of the population. The sample must be representative of the population in order for the findings to be generalised to the population (Portney & Watkins 2015:155). A sample serves as a reference group for estimating characteristics of or drawing conclusions about the population. Sampling is the process of selecting a sample from the population (Polit & Beck 2012:742).

#### ***3.5.2.1 Sampling techniques***

Probability sampling is used in quantitative research to ensure that each element in the population has an equal and independent chance of being included in the sample to achieve representativeness (Polit & Beck 2012:280). The researcher had permission to access the list of two hundred (250) student nurses registered at the nursing college for second year in the 2016 academic year. The number 250 was manageable and adequate for data analysis, as a result, the whole population was included in the survey and no sampling procedures were carried out.

### **3.5.3 Data collection**

Data is described as information that is gathered from counts, measurements responses or observations (Grove et al 2013:507) while data collection is the precise and systemic gathering of information to address a research question (Polit & Beck 2012:725). Data collection as it occurred in this study is described in the paragraphs that follow.

#### ***3.5.3.1 Data collection method and instrument***

A descriptive survey was used as a method of data collection using a questionnaire as a data collection instrument.

#### 3.5.3.1.1 *Survey*

According to Polit and Beck (2012:744), surveys collect information on peoples' actions, knowledge, beliefs, intentions, opinions, attitudes, preferences and values through direct questioning. A survey consists of asking questions of a representative cross-section of the population at a single point in time. The questions are often mailed to members of the target population, asked through personal face-to-face interviews, asked over the telephone, distributed electronically or handed out to self-contained groups such as nurses in a hospital, to answer and return. The latter method was used in this study to ensure that data are collected within a short period and the return rate was enhanced. Polit and Beck (2012:265) point out the strengths of surveys. Firstly, a great deal of information can be obtained from large representative samples or the entire population in an economical manner. Secondly, the surveys have the potential to generalise to large populations if appropriate sampling design and proper methods were implemented.

#### 3.5.3.1.2 *Questionnaire*

A self-designed, structured self-administered questionnaire was used to collect data. A questionnaire is a document used to gather self-report data via self-administration of questions. The use of structured questionnaires in research enhances the objectivity and supports statistical analysis (Polit & Beck 2012:297). The respondents complete the questionnaire for themselves on a paper -and-pen instrument or directly onto the computer, responding to a series of pre-determined questions by the researcher (Polit & Beck 2012:265). Questionnaires are used to gather information from a large number of participants, information that can be easily quantified and analysed. The paper-and-pen questionnaire was used in this study.

The researcher developed the questionnaire (Annexure E) in English. The questions that were formulated were guided by the objectives of the study and the literature review. The questionnaire comprised the following sections:

#### **Section A: Biographical information**

The section comprised five (5) items intended to elicit information about the age, gender, registration status with SANC as a student nurse, level of training and the study

programme for which the respondents were registered. The purpose of gathering such information was to ensure that the respondents met the eligibility criteria and to get a descriptive profile of the respondents to ensure a basis for data analysis in relation to other sections of the questionnaire as per objectives of the study.

## **Section B: The student nurses' experiences of teaching and learning through simulation**

This section contained fifty-one (51) items designed to elicit the information about student nurses' experiences (views, opinions, feelings and challenges) of teaching and learning through simulation. This was in line with the objectives of the study. A four-point rating scale with "1=Strongly agree", "2=Agree", "3 Disagree", and "4=Strongly disagree".

### ***3.5.3.2 Validity and reliability***

In quantitative research, validity refers to the degree or extent to which the questionnaire or other methods of data collection measure the phenomenon under investigation (Parahoo 2014:415). Babbie (2010:154) further explain that validity refers to the extent to which an empirical measure adequately reflects the real meaning of a concept under study.

Reliability refers to the consistency of a particular method in measuring or observing the same phenomenon (Parahoo 2014:415). Reliability is a matter of whether a particular technique, applied repeatedly to the same object, yields the same result each time (Babbie 2010:153).

#### ***3.5.3.2.1 Measures taken to ensure validity of the study***

The procedure to establish content related validity as suggested by Polit and Beck (2012:205) was followed. The procedure included an exhaustive literature review and consultation with experts and representatives of the relevant population.

The questionnaire was developed following an extensive study of the relevant literature and this helped to determine the boundaries of the study. A draft questionnaire was submitted to the supervisors of the study at the University of South Africa (UNISA) and a

statistical consultant who examined the questionnaire to determine whether all the component elements of the variable were measured.

A pre-test on a sample of five (5) second year student nurses was conducted, none of whom participated in the actual study. Each student nurse was asked to critically analyse all the questions on the questionnaire and to comment on the wording, order and clarity of questions, redundant questions, length of the questionnaire, the time required to complete the questionnaire and inadequate or confusing response categories (Polit & Beck 2012:337). The comments from the pre-test study were used to improve the questionnaire.

#### **3.5.3.2**     *Measures taken to ensure reliability of the questionnaire*

With the guidance of the statistician, the Cronbach's alpha reliability coefficient was used as an estimate of the internal consistency of the whole questionnaire. The internal consistency of the whole questionnaire was deemed acceptable at 0.9776. According to Polit and Beck (2012:454), reliability coefficients above 0.80 usually are considered good.

#### **3.5.3.3**     *Data collection process*

The respondents of the study were given written information about the research in a covering letter that accompanied the questionnaire. The letter granting permission to conduct the study from the nursing college and the provincial department of health formed part of the information given to the study participants. The respondents were requested to complete the questionnaire and place it in an envelope addressed to the researcher placed in the designated area. The researcher collected the questionnaires as soon as the respondents had completed them but waited for a period of five (5) working days to ensure that all questionnaires were collected. Data collection took place from 11 July 2016 to 15 July 2016.

Two hundred and thirteen (213) questionnaires were handed out to second year student nurses (who were willing to take part in the study) by the researcher and by the end of five working days, two hundred and six (206) completed questionnaires were collected, resulting in 97% return rate.



#### **3.5.3.4 Data analysis**

According to Polit and Beck (2012:378), data analysis is the systematic organisation and synthesis of research data. Gerrish and Lathlean (2014:27) explain that once data is collected they need to be assembled and organised in such a way that conclusions can be drawn from them. The researcher numbered each completed questionnaire and entered data into software program. All data entered were checked for accuracy and missing data (missing value analysis done) and the collected questionnaires were usable for analysis. With the assistance of the statistician, data was analysed using STATA 14 computer program to generate descriptive statistics. Data were then summarised and results presented by means of frequency distributions, tables and graphs in chapter 4.

### **3.6 ETHICAL CONSIDERATIONS**

Ethical principles applied in this research ensured that the rights of the participants and the institutions at which the research was done were protected. Ethical considerations, which were adhered to during the study process are described in the paragraphs that follow.

#### **3.6.1 Ethical clearance**

The research proposal was submitted to the higher degrees committee of the Department of Health Studies at UNISA. An ethical clearance certificate was issued and the permission to conduct the study was given (Annexure A).

#### **3.6.2 Approval**

Letters requesting permission to conduct the study were written to the Provincial Department of Health (Annexure B) and the Principal of the nursing college where the study was conducted. Permission to conduct the study at the college of nursing was granted in writing (Annexures C).

### **3.6.3 Informed consent**

Consent is an explicit permission given the study participants, indicating their willingness and agreement to take part in the study. Informed consent means that participants have adequate information regarding the research, they comprehend the information given, and they have the capacity or competency to make decisions voluntarily, without any form of coercion. The study participants have the right of free choice that enables them to consent, decline and to withdraw from participating in the research (Polit & Beck 2012:157, 730).

Before giving consent, the student nurses were given information about the study purpose, procedures and expected duration of participation. This enabled them to make an informed decision regarding their participation in the study. The participants were not expected to give a written consent as completion of the questionnaire implied voluntary consent. The covering letter requesting the student nurses' participation in the study is included as Annexure. D

Student nurses are not regarded as a vulnerable group because they are adults who possess autonomy and consent competency. However, a lecturer-student relationship is characterised by power imbalances and student nurses may be fearful of sanctions if they do not take part in the study. The student nurses were reassured that their refusal to participate in the study would have no impact on them as student nurses or on their studies.

### **3.6.4 Anonymity and confidentiality**

Confidentiality means that the information that the researcher obtains about and from the research participants should not be divulged to other people without their permission. Anonymity, on the other hand, means that the researcher should ensure that no participant in the study is identified from any of the responses that they gave. The following measures were taken to ensure that the principles of anonymity and confidentiality were emphasised:

- The participants were requested not to write their names on the questionnaire.
- The identity of the nursing college where the study was conducted was protected and they were not disclosed in any way
- The raw data were kept safe and confidential, locked up with no unauthorised access
- Data were reported in a manner that did not identify or link the participants with the information

### **3.6.5 Justice**

According to Polit and Beck (2012:155), the research participants have the right to be treated fairly and equally unless there is reasonable justification to treat them differently. The respondents' right to fair treatment and equality was upheld by making use of the predetermined inclusion criteria to select respondents for the study to ensure proper representation in the research samples and respect for diversity in terms of age and gender.

### **3.6.6 Beneficence and non-maleficence**

Beneficence refers to the principle of doing 'good' and protection of participants from physical, emotional, social and psychological harm (Polit & Beck 2012:171; Parahoo 2014:748) while non-maleficence means not doing harm to the research participants. According to the two principles, researchers must act for the good of the participants all the time to maximise the benefits and minimise harm to the research participants. The participants for this study were at no foreseeable physical harm from the study as it involved completion of the questionnaires. Respect for the principles of beneficence and non-maleficence was shown by upholding confidentiality because breach of confidentiality can cause psychological and/or social harm. The study was only conducted after the ethical clearance had been issued.

### **3.6.7 Scientific integrity**

In order to protect the scientific integrity, the research process was followed and documented. All the sources consulted were acknowledged accordingly.

### **3.7 CONCLUSION**

This chapter described the research design and methods used in this study. The related ethical issues and measures taken to enhance the validity and reliability were described. In the next chapter, the analysis and findings of the study are presented.

## **CHAPTER 4**

### **DATA ANALYSIS, PRESENTATION AND DESCRIPTION OF THE RESEARCH FINDINGS**

#### **4.1 INTRODUCTION**

The purpose of this chapter is to present the analysis and the description of the findings of the study. The chapter begins with the description of data management and analysis followed by the presentation of the results of the respondents' biographical data and their experiences of teaching and learning through simulation and conclusion. The data collection and analysis presented in this chapter were carried out according to the research methods described in chapter 3.

#### **4.2 DATA MANAGEMENT AND ANALYSIS**

Two hundred and six (206) of the two hundred and thirteen (213) distributed questionnaires were returned, resulting in a response rate of 97%. Prior to data analysis, the questionnaires were given unique identity numbers from 1-206 and they were checked and co-checked for completeness and consistency before the analysis. Data were analysed with the assistance of the statistician using Stata 14 statistical software programme. Descriptive statistics that were performed included the mean, frequency distribution and percentages. The statistics were presented as received from the data analysis software. The results were presented mainly by means of tables, figures, and graphs.

#### **4.3 RESEARCH RESULTS**

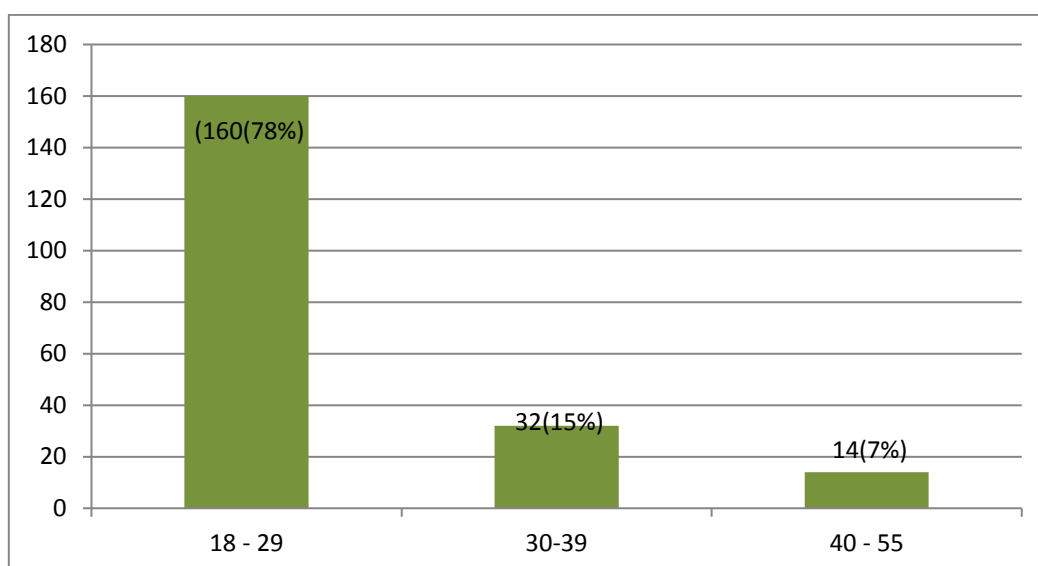
The results of the study are presented in the order in which data were collected, starting with the demographic data followed by the students' experiences about teaching and learning through simulation.

### 4.3.1 Biographical data

Biographical data reported in this section-included age, gender, registration status with SANC, study programme and the level of training of the respondents.

#### 4.3.1.1 Respondents' age

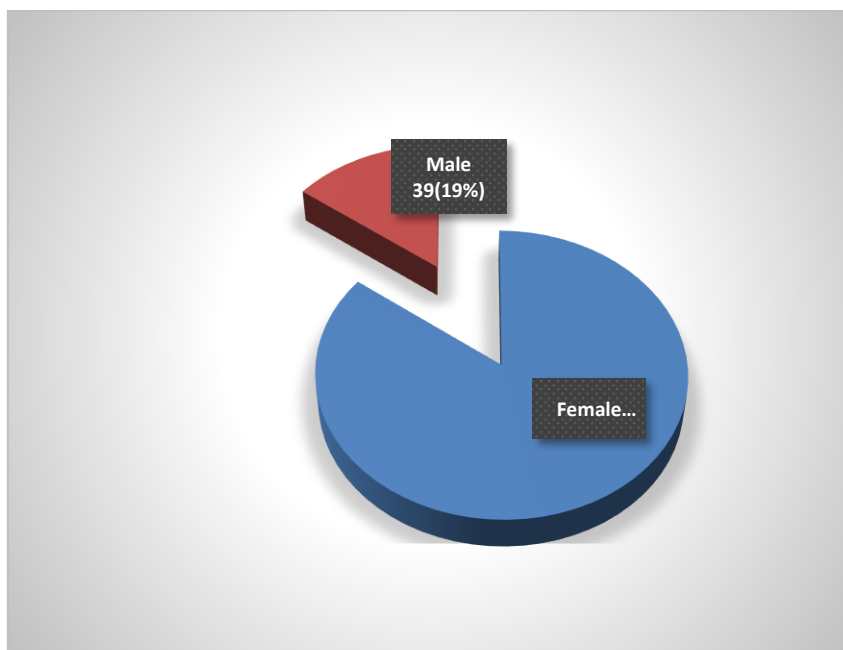
As shown in figure 4.1, the majority of student nurses 160 (78%) were in the age range of 18-29 years, followed by 32 (15%) in the 30-39 years' age range. Only 14 (7%) of participants were in 40-45 years' age range. The mean age for the respondents was 26 years.



**Figure 4.1 Respondents' age (N=206)**

#### 4.3.1.2 Respondents' gender

The majority of respondents were female 167 (81%) and 39 (19%) were male as shown in figure 4.2.



**Figure 4.2 Respondents' gender (N=206)**

#### ***4.3.1.3 Respondents' current registration status with SANC***

All respondents 206 (100%) were registered with the South African Nursing Council (SANC) as student nurses

#### ***4.3.1.4 Respondents' level of training***

All respondents, 206 (100%) were in the second level of training.

### **Summary and discussion of the biographical data of study respondents**

A summary of the respondents' biographical data is presented in table 4.1.

**Table 4.1      Frequency distribution of respondents according to biographical data  
(N=206)**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>		
Male	39	19
Female	167	81
Total	206	100.00
<b>Age in years (Average age=26)</b>		
18-29	160	78.0
30-39	32	16.0
40-55	14	6.0
Total	206	100.00
<b>SANC registration</b>		
Yes	206	100.00
No	0	0.0
Total	206	100.00
<b>Level of training</b>		
2nd year	206	100.00
Total	206	100.00

Two hundred and six (206) second year student nurses participated in the survey, the majority of whom were females. Accordingly, the female student nurses (81%) represented in the study shows the gender distribution in the nursing profession and at the college where the majority of students are female. A large number of participants 160 (78%) were between 18–29 years of age, with an average age of 26 years.

All the student nurses 206 (100%) were registered with the SANC as student nurses, thereby complying with statutory requirements that all persons undergoing education or training in nursing should be registered with SANC. The student nurses who participated in the survey met the set eligibility criteria for this study.

#### **4.3.2 Student nurses' experiences of teaching and learning through simulation**

Section B of the questionnaire consisted of items designed to elicit the information about the student nurses' experiences of teaching and learning through simulation.

Respondents had to indicate the extent to which they strongly they agreed or disagreed with each of the fifty-one (51) statements about teaching and learning through simulation

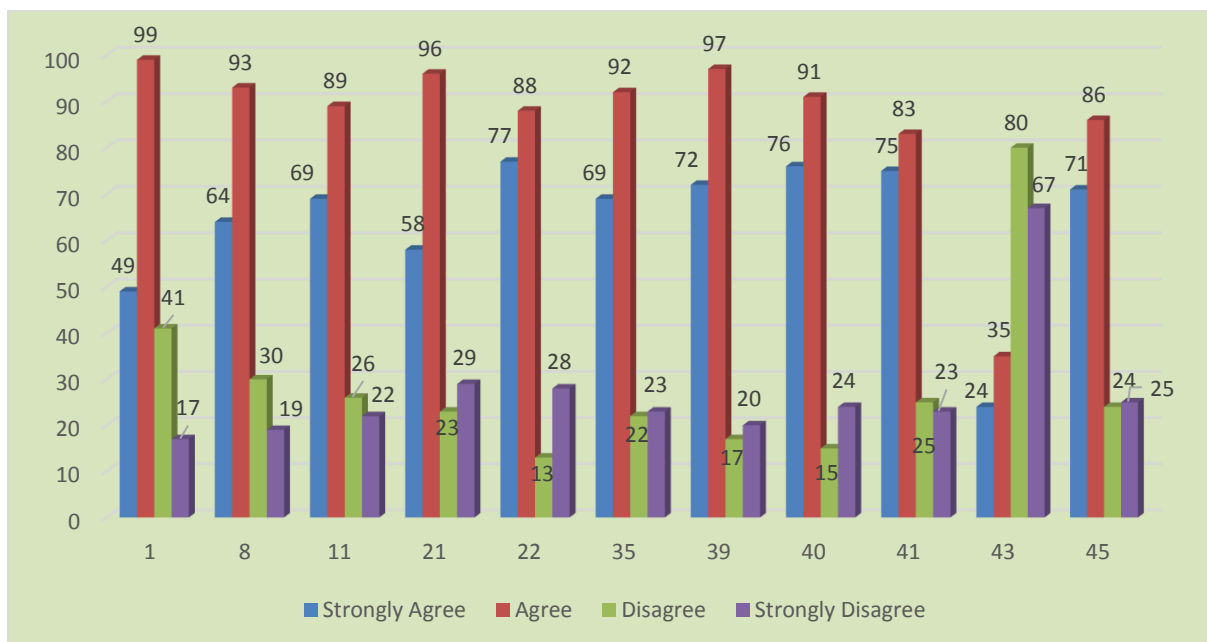


on a four-point Likert-type scale where 1 denoted "strongly agree and 4 "strongly disagree".

The results from the analysis of student nurses' experiences of teaching and learning through simulation are presented under the headings (1) *Knowledge*, (2) *Skills* that student nurses acquired from teaching and learning through simulation and (3) *Attitude* towards teaching and learning through simulation, as well as (4) *Challenges* that student nurses experienced regarding teaching and learning through simulation.

#### 4.3.2.1 *Student nurses' responses regarding knowledge gained from teaching and learning through simulation*

Figure 4.3 shows student nurses' responses regarding knowledge acquired from teaching and learning through simulation.



**Figure 4.3 Knowledge acquired from teaching and learning through simulation (N=206)**

A large number of respondents 99 (48%) and 49 (24%) gave item 1 (*I learn a variety of clinical skills without fear of harming real patients*) a "agree" and "strongly agree" rating respectively while 17 (8%) and 41 (20%) respondents gave the "strongly disagree" and "disagree" rating respectively.

Ninety-three (45%) and 64 (31 %) gave Item 8 (*I was able to make my own connection between theory and practice*) an “agree” and “strongly agree” respectively. Disagreement ratings of 30 (15%) “disagree” and 19 (9%) “strongly disagree” were given for item 8.

Item 11 (*I felt that the learning outcomes set was achieved*) obtained agreement ratings of 89 (43%) and 69 (33%) “agree” and “strongly agree” respectively while 26 (13%) and 22 (11%) respondents gave the item disagreement ratings of “disagree” and “strongly disagree” respectively.

The majority of respondents 96 (47%) and 58 (28%) gave item 21 (*I was able to identify any deficiencies in the skills I practiced*) a rating of “agree” and “strongly agree” respectively. The agreement ratings given to the item 21 by the student nurses were 23 (11%) and 29 (14%) “disagree” and “strongly disagree” respectively.

With regard to item number 22 (*I did learn from the simulation training*) respondents gave agreement ratings of 88 (43%) and 77 (37%) “agree” and “strongly agree” while 28 (14%) and 13(6%) respondents gave a disagreement rating the same item number 22.

A large number of respondents 92 (45%) and 69 (33%) gave item 35 (*I can see more clearly how I can apply simulation to practice*) a rating of “agree” and “strongly agree” respectively while 22 (10%) and 23 (11%) respondents gave the “disagree” and “strongly agree” rating respectively.

With regard to item number 39 (*simulation re-enforced my learning*) the respondents gave an agreement rating of 97 (47%) and 72 (35%) “agree” and “strongly agree” respectively while 17 (8%) and 20 (10%) respondents gave disagreement ratings.

Item 40 (*I felt that it helped me identify my problem areas*) obtained agreement ratings of 91 (44%) and 76 (37%) “agree” and “strongly agree” respectively while 15 (7%) and 24 (12%) respondents gave the same item disagreement ratings of “strongly disagree” and “strongly disagree” respectively.

A large number of the respondents, 158 (77%) gave item 41 (*It tested my clinical and theoretical knowledge*) agreement ratings of 83 (40%) agree and 75 (36%) strongly agree

while 25 (12%) and 23 (11%) respondents gave the item “disagree” and “strong disagreement” rating.

Item number 43 (*My level of competence was not assessed*) was given an “agree” and “strongly agree” rating by 35 (17%) and 24 (12%) respondents respectively while 80 (39%) and 67 (33%) respondents gave the item “disagree” and “strongly disagree” ratings respectively. A disagreement rating implied a positive experience of learning through simulation.

With regard to item number 45 (*It increased my knowledge of a principle of doing a skill*), ratings of “agree” and “strongly agree” of 86 (42%) and 71 (35%) respectively were given. Disagreement ratings of “disagree” and “strongly disagree” were given by 24 (12%) and 25 (12%) respondents respectively.

### **Summary and discussion of results on knowledge acquisition from teaching and learning through simulation**

The majority of student nurses gave agreement ratings to all the items, and the agreement rating given meant positive experiences of teaching and learning through simulation. The results showed that teaching and learning through simulation leads to a significant increase in knowledge acquisition among student nurses. Similar findings of positive effects of simulation on knowledge acquisition were reported in previous studies that investigated the effectiveness of simulation on knowledge acquisition among nursing students. Cant and Cooper (2010) conducted a systemic review of simulation-based learning in nursing education, and the review included twelve studies that used experimental or quasi-experimental designs. In all studies reviewed, simulation was recognised as a valid teaching/learning strategy and half of those studies that compared simulation with a control group were able to show statistically significant additional gains in knowledge and critical thinking ability.

Akhu-Zaheya, Gharaibeh and Alostaz (2012) conducted a quasi-experimental study to examine the effects of high fidelity basic life support simulation on knowledge acquisition and retention among Jordanian students. The results of that study revealed an increase in knowledge acquisition and retention for both experimental and control group. Lewis and Ciak (2011) conducted a quasi-experimental design on pre-licensure students in a

Growing Family Nursing course during a period of four semesters. The aim was to measure the effectiveness of the simulation experience on students' knowledge. According to the findings of the same study, a significant gain in knowledge was noted on the pre-and post-tests. For each semester, a statistically significant increase in knowledge was measured using a paired student t-test. The researchers concluded that simulation provides effective means of improving knowledge in a safe environment (Lewis & Ciak 2011).

The findings of studies by Hope et al (2011) and Madhavprabhakaran, Al-Khasawneh and Wittmann (2015:105) on simulation as a teaching strategy and its benefits on clinical learning outcomes reported positive student nurses' response to simulation as a learning approach that facilitates the application of theory in a safe controlled environment. The majority of nursing students (95.2%) who took part in Madhavprabhakaran et al (2015:105) study agreed that simulation based training enhanced their knowledge.

#### ***4.3.3.2 Skills acquired by student nurses from participating in teaching and learning through simulation***

Table 4.2 shows student nurses' responses regarding skills acquired from teaching and learning through simulation.

**Table 4.2 Skills acquired by student nurses participating in teaching and learning through simulation (N=206)**

Items	Through simulation, I	Strongly agree	Agree	Disagree	Strongly disagree	Total
Item 2	I get the opportunity to reflect on my performance and learn from my mistakes	105 (51%)	58 (28%)	21 (10%)	22 (11%)	206 (100%)
Item 5	I was provided with opportunity to reflect on practice during simulation	103 (50%)	60 (29%)	18 (9%)	25 (12%)	206 (100%)
Item 7	I was directly involved in my own learning	83 (40%)	78 (38%)	20 (10%)	25 (12%)	206 (100%)
Item 12	I felt the direct assistance and support helped me master the skills	71 (34%)	89 (44%)	25 (12%)	21 (10%)	206 (100%)
Item 15	I experienced that simulation made me more aware when checking the patient	99 (48%)	61 (30%)	18 (8%)	28 (14%)	206 (100%)
Item 16	I had a written procedure to follow	103 (50%)	61 (30%)	15 (7%)	27 (13%)	206 (100%)
Item 17	I was demonstrated the procedure by the lecturer	117 (57%)	44 (21%)	12 (6%)	33 (16%)	206 (100%)
Item 18	I was given the opportunity to practice the skill	104 (50%)	58 (28%)	16 (8%)	28 (14%)	206 (100%)
Item 24	I was actively involved in the simulation sessions	75 (37%)	97 (47%)	13 (6%)	21 (10%)	206 (100%)
Item 26	I felt simulation contributed to application of a skill	77 (38%)	98 (47%)	11 (5%)	20 (10%)	206 (100%)
Item 30	I felt simulation helped me apply skills with a positive attitude	95 (46%)	67 (33%)	18 (9%)	26 (12%)	206 (100%)
Item 31	I could experiment with skills on non-living patients	89 (43%)	72 (35%)	25 (12%)	20 (10%)	206 (100%)
Item 32	I felt competent after simulation sessions	53 (26%)	90 (44%)	38 (18%)	25 (12%)	206 (100%)
Item 48	I was able to demonstrate back the skill	67 (33%)	96 (47%)	21 (10%)	22 (10%)	206 (100%)

A large number of respondents 105 (51%) and 58 (28%) gave item 2 (*I get the opportunity to reflect on my performance and learn from my mistakes*) a “strongly agree” and “agree” rating respectively while 21 (10%) and 22 (11%) respondents gave the “disagree” and “strongly disagree” rating respectively.

One hundred and three (50%) and 60 (29%) gave item 5 (*I was provided with opportunity to reflect on practice during simulation*) “strongly agree” and “agree” rating respectively. Disagreement ratings of 18 (9%) “disagree” and 25 (12%) “strongly disagree” were given for the same item.

Item 7(*I was directly involved in my own learning*) obtained disagreement ratings of 20 (10%) and 25 (12%) “disagree” and “strongly disagree” respectively while 83 (40%) and 78 (38%) respondents gave the item agreement ratings of “strongly agree” and “agree” respectively.

With regard to item number 12 (*I felt the direct assistance and support helped me master the skills*) gave an agreement rating of 71 (34%) “agree” and 89(44%) “strongly agree” while 25 (12%) and 21 (10%) respondents gave a disagreement rating “disagree” and “strongly disagree” rating respectively.

A large number of respondents 103 (50 %) and 61 (30%) gave item 16 (*I had a written procedure to follow*) a “strongly agree” and “agree” rating respectively while 15 (7%) and 27 (13%) respondents gave the “disagree” and “strongly disagree” rating respectively.

The majority 117 (57%) and 44 (21%) gave item 17 (*I was demonstrated the procedure by the lecturer*) an agreement rating of “strongly agree” and “agree” respectively. The disagreement ratings given to the item 17 by the student nurses were 12 (6%) “disagree” and 33 (16%) “strongly disagree”.

Item number 18 (*I was given the opportunity to practice the skill*) obtained “strongly agree” and “agree” ratings of 104 (50%) and 58 (28%) respectively while the “disagree” and “strongly disagree” ratings of 16 (8%) and 28 (14%) were given for the same item.

The majority of respondents 75 (37%) and 97 (13%) gave item number 24 (*I was actively involved in the simulation sessions*) “agree” and “strongly agree” ratings respectively. Thirteen (6%) and 21 (10%) respondents gave item 24 the disagreement rating.

A large number of respondents 77 (38 %) and 98 (47%) gave item 26 (*I felt simulation contributed to application of a skill*) a “strongly agree” and “agree” rating respectively while

11 (5%) and 20 (10%) respondents gave the “disagree” and “strongly disagree” rating respectively.

Majority of the respondents in item 30 strongly agreed 95 (46%) and 67 (33%) agreed (*I felt simulation helped me apply skills with a positive attitude*) and 18 (9%) disagreed and 26 (12%) strongly disagreed.

Item 31 (*I could experiment with skills on non-living patients*) obtained an agreement ratings of 89 (43%) and 72 (35%) “strongly agree” and “agree” respectively while 25 (12%) and 20 (10%) respondents gave the item disagreement ratings of “dis agree” and “strongly disagree” respectively.

Item 32 (*I felt competent after simulation sessions*) received a “strongly disagree” rating by 25 (12%) respondents and a “disagree” rating by 38 (18%). Majority 53 (26%) and 90 (44%) respondents gave an agreement rating of “strongly agree” and “agree” respectively.

With regard to item number 48 (*I was able to demonstrate back the skill*), ratings of “agree” and “strongly agree” of 67 (33%) and 96 (47%) respectively were given. Disagreement ratings of “disagree” and “strongly disagree” of 21 (10%) and 22 (10%) were given by the respondents.

### **Summary of the results on skills acquired from teaching and learning through simulation**

According to the results, all items received agreement ratings, which meant positive experiences of skills acquired from teaching and learning through simulation. In this study, the skills that were acquired from teaching and learning from simulation were reflection, application of theory to a skill and clinical skills because of practice, guidance and support given by the lecturers.

More than half of the respondents gave a “strongly agree” rating to the following items:

- Item 2: I get the opportunity to reflect on my performance and learn from my mistakes

- Item 5: I was provided the opportunity to reflect on practice
- Item 16: I had a written procedure to follow
- Item 17: I was demonstrated the procedure by my lecturer
- Item 18: I was given the opportunity to practice the skill

The student nurses' responses to items on skills acquired from simulation reflected findings similar to other studies in the literature. Hope et al (2011) conducted a study on the use of simulation as a teaching learning strategy and reported positive student nurses' response to simulation as a learning approach, indicating that the student nurses who participated in their study reported that they felt prepared for practice and recognised that simulated learning improved the development of their psychomotor skills. The results of study conducted by Moughrabi and Wallace (2015) on the effectiveness of simulation in advancing nurses' competency showed that simulation was effective in enhancing students' clinical competency. The results of the study by Dunn, Osborne and Hope (2014) support the assumption that high-fidelity simulation training may be a valuable tool for increasing nursing students' efficacy for aspects of clinical practice. Pike and O'Donnell (2010:405) corroborate this view by stating that clinical simulation increases learner confidence in their ability to perform clinical skills in the clinical setting.

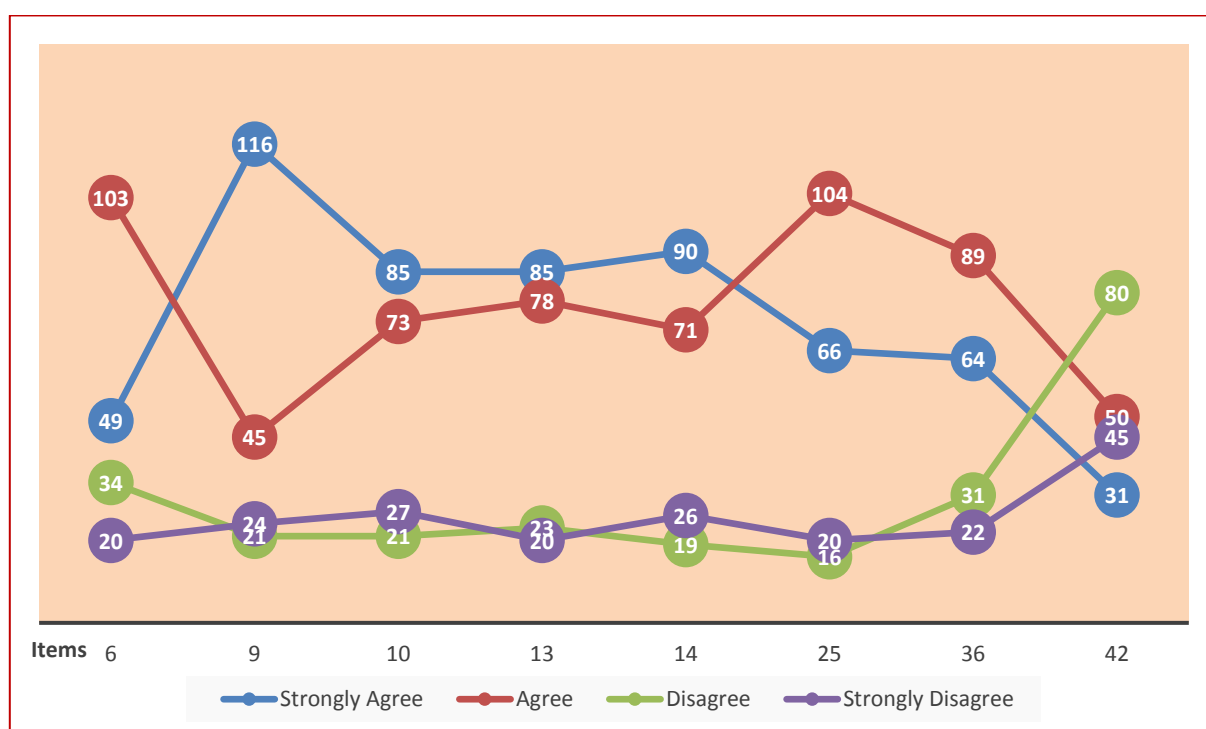
The majority of student nurses who participated in this study agreed that simulation provided them the opportunity to reflect on their performance and practice and to learn from their mistakes. Skill acquisition is key to Benner's model of novice-to-expert. According to the model, the process of reflection strengthens the acquisition of knowledge and skills. Arnold (2015) applied the model to the challenges of central line associated blood stream infections and reported that the skills necessary for proper care of central lines need to be taught through demonstration. This can be appropriate for student nurses performing return demonstration during simulation, further proving they have the 'know what and how' when faced with task in the real practice. The same author further explain that Benner's concept can be used to bridge the gap between theory and the actual skill. Wilford and Doyle (2006:605) point out that, following simulation, the learners are able to reflect on their performances with a facilitator. Consequently, by discussing their areas of strength and development in line with current evidence, they can begin to improve their competence. The use of simulation allows nurses the opportunity to practice and refine their skills. Deeper meaning and skill can be enhanced by reflection in practice and education (Benner 1984).



The findings of this study suggest that integration of simulation in undergraduate nursing programmes enables the student nurses to develop competence in the clinical skills and confidence prior to practice.

#### 4.3.3.3 Student nurses' attitude towards teaching and learning through simulation

Figure 4.4 shows the student nurses' attitude towards teaching and learning through simulation.



**Figure 4.4 Student nurses' attitude towards teaching and learning through simulation (N=206)**

Item number 6 (*I got the opportunity to express my own feelings*) obtained “strongly agree” and “agree” ratings of 49 (24%) and 103 (50%) respectively while the “disagree” and “strongly disagree” ratings of 34 (17%) and 20 (10%) were given for the same item.

The majority of respondents 116 (56%) and 45 (22%) gave item number 9 (*I was encouraged to learn more*) “agree” and “strongly agree” ratings respectively. Forty-six (22%) respondents gave the same item the disagreement rating.

According to the results, 85 (41%) student nurses responded “strongly agree” and 73 (35%) “agree” to item number 10 (*I felt I could be a safe practitioner*). Twenty-one (10%) respondents gave a “disagree” rating while 27 (13%) gave a “strongly disagree” response.

With regard to item number 13 (*I felt clinical simulation increased my self-esteem*) ratings of “agree” and “strongly agree” were given by 78 (38%) and 85 (41%) respondents respectively. Disagreement ratings of “disagree” and “strongly disagree” were given by 23 (11%) and 20 (10%) respondents respectively.

Ninety (44%) and 71(34%) participants responded “strongly agree” and “agree” respectively to item number 14 (*I realised the extent of what could happen on a real patient*) while 19 (9%) responded disagree and 26 (13%) strongly disagree to the same item.

For item 25 (*I felt an increase in my confidence levels during simulation*), results show that the majority of student nurses 104 (50%) and 66 (32%) responded “agree” and “strongly agree” respectively. Twenty (10%) and 16(8%) gave disagreement ratings to the item.

Item number 36 (*It assisted me with my personal emotional growth*) obtained “strongly agree” and “agree” ratings of 89 (43%) and 64 (31%) respectively while the “disagree” and “strongly disagree” ratings of 31 (15%) and 22 (11%) were given for the same item.

Thirty-one (15%) and 50 (25%) responded, “strongly agree” and “agree” respectively to item number 42 (*I experienced a lot of stress during simulation*) while 80 (38%) responded disagree and 45 (22%) strongly disagree to the same item. The disagreement rating for this item meant a positive experience

### **Summary of results on student nurses attitude towards teaching and learning through simulation**

Majority of the students gave a positive response towards the attitude towards teaching and learning through simulation. The experiences of the respondents are similar to the study conducted by Branch (2013:30) which found that simulations allow students to make mistakes safely and this has shown to increase their confidence levels in what to

expect and to conduct themselves in the clinical setting. From this study it is shown that a facilitator and student led simulations encourages proactive learning. Overall the students reported simulation process as a positive experience.

The findings of previous studies conducted by Cant and Cooper (2010), Darcy, Mahoney, Hancock, Lorianni-Cimbak and Curley (2012) and Gore, Hunt, Parker, and Raines (2010), indicate that the students reported to be satisfied, to have achieved self-confidence because of simulation.

Kelly et al (2016:312) conducted a study on the effects of simulation on student nurses' levels of self-confidence and requested the students to rate their confidence on a 10-point Likert Scale before and after the simulation. The results of the same study revealed that the students agreed that simulation offered an effective way of improving confidence. The results of the same study showed that simulation helped them reduce anxiety and contributed to a positive learning environment.

In another study by Zepure, Miller and Haras (2014:408), the student nurses rated simulation as a positive experience and reported high levels of confidence. According to Rogers' (2009:885) students perceived simulation as a useful learning experience that increased their confidence.

O'Boyle-Duggan (2010) conducted a study that explored live simulation as a strategy for teaching nursing students about person-centered health care for clients who have learning disabilities and challenging behaviors. The majority of the students who participated in that reported that they had improved attitudes and insights, and increased competence and confidence. Ehlers (2012:130) states simulation situations enable students to acquire skills they might not encounter in reality and it also offers students opportunities to become competent practitioners before performing skills on patients.

#### 4.3.3.4 Challenges regarding teaching and learning through simulation (206)

**Table 4.3 Challenges experienced from teaching and learning through simulation (N=206)**

Items	Through simulation, I	Strongly agree	Agree	Disagree	Strongly disagree	Total
Item 3	I felt the lecturer had both clinical experience and theoretical knowledge on the skill simulated	118 (57%)	43 (21%)	9 (5%)	36 (17%)	206 (100%)
Item 4	I could understand the lecturer	80 (38%)	81 (40%)	17 (8%)	28 (14%)	206 (100%)
Item 19	I was given feedback after the simulation session	73 (35%)	66 (33%)	42 (20%)	25 (12%)	206 (100%)
Item 20	I felt discouraged or frustrated during the simulation session	29 (14%)	38 (19%)	71 (34%)	68 (33%)	206 (100%)
Item 23	I thought the environment accurately reflected reality	57 (28%)	87 (42%)	34 (17%)	28 (13%)	206 (100%)
Item 27	I felt that simulation had no relevance to practice	27 (13%)	15 (7%)	53 (26%)	111 (54%)	206 (100%)
Item 28	I felt the simulated skills in the laboratory are not the same as in practice	21 (10%)	56 (27%)	73 (36%)	56 (27%)	206 (100%)
Item 29	I felt simulation was not helpful towards my learning	27 (13%)	15 (7%)	63 (31%)	101 (49%)	206 (100%)
Item 33	I was able to demonstrate back the skill	69 (33%)	83 (40%)	31 (15%)	23 (12%)	206 (100%)
Item 34	I felt simulation was of no benefit to me	35 (17%)	28 (13%)	50 (24%)	93 (46%)	206 (100%)
Item 37	It helped me to look at things differently	68 (33%)	96 (47%)	25 (12%)	17 (8%)	206 (100%)
Item 44	I was not prepared for the simulation sessions	26 (12%)	45 (22%)	68 (33%)	67 (33%)	206 (100%)
Item 46	I have gained moral support during simulation	83 (40%)	69 (33%)	15 (7%)	27 (13%)	206 (100%)
Item 47	I lacked of interest during simulation	35 (13%)	28 (7%)	50 (26%)	93 (54%)	206 (100%)
Item 49	I felt the lecturer displayed an attitude of respect towards the students	99 (48%)	65 (32%)	13 (6%)	29 (14%)	206 (100%)
Item 50	I felt the lecturer displayed an attitude of respect towards the students	93 (45%)	71 (34%)	18 (9%)	24 (12%)	206 (100%)
Item 51	I felt that there was control during the simulation sessions	97 (47%)	71 (34%)	16 (8%)	22 (11%)	20 (100%)

Item 3 (*I felt the lecturer had both clinical experience and theoretical knowledge on the skill simulated*) obtained agreement ratings of 118 (57%) and 43 (21%) “strongly agree” and “agree” respectively while 9 (5%) and 36 (17%) respondents gave the item disagreement ratings of “disagree” and “strongly disagree” respectively.

Eighty (38%) and 81 (40%) gave Item 4 (*I could understand the lecturer*) “strongly agree” and “agree” rating respectively. Disagreement ratings of 17 (8%) “disagree” and 28 (14%) “strongly disagree” were given for item 4.

Item 19 (*I was given feedback after the simulation session*) obtained disagreement ratings of 42 (20%) and 25 (12%) “disagree” and “strongly disagree” respectively while 73 (35%) and 66 (33%) respondents gave the item agreement ratings of “strongly agree” and “agree” respectively.

The majority 71 (34%) and 68 (33%) gave item 20 (*I felt discouraged or frustrated during the simulation session*) disagreement rating of “disagree” and “strongly disagree” respectively. The agreement ratings given to the item 20 by the student nurses were 29 (14%) “strongly agree” and 38 (19%) “agree”. A disagreement rating for this item implied a positive experience of teaching and learning through simulation

With regard to item number 23 (*I thought the environment accurately reflected reality*), ratings of “agree” and “strongly agree” of 57 (28%) and 87 (42%) respectively were given. Disagreement ratings of “disagree” and “strongly disagree” of 34 (17%) and 28 (13%) were given by the respondents.

The majority 53 (26%) and 111 (54%) gave item 27 (*I felt that simulation had no relevance to practice*) disagreement rating of “disagree” and “strongly disagree” respectively. The agreement ratings given to the item 27 by the student nurses were 27 (13%) “strongly agree” and 15 (7%) “agree”. A disagreement rating for this item implied a positive experience of teaching and learning through simulation

A large number of respondents 73 (36%) and 56 (27%) gave item 28 (*I felt the simulated skills in the laboratory are not the same as in practice*) a “disagree” and “strongly disagree” rating respectively while 21 (10%) and 56 (27%) respondents gave the “strongly agree”

and “agree” rating respectively. A disagreement rating for this item implied a positive experience of teaching and learning through simulation.

Item number 29 (*I felt simulation was not helpful towards my learning*) was given an “agree” and “strongly agree” by 27 (13%) and 15 (7%) respectively whereas a rating “disagree” and “strongly disagree” of 63 (31%) and 101 (49%) respectively. A disagreement rating for this item implied a positive experience of teaching and learning through simulation

With regard to item number 33 (*I was able to demonstrate back the skill*) gave an agreement rating “agree” and “strongly agree” of 69 (33%) and 83 (40%) while respondents gave a disagreement rating and 31 (15%) disagreed and 23 (12%) disagreed they were able to demonstrate the skill back.

Item 34 (*I felt simulation was of no benefit to me*) obtained disagreement ratings of 50 (24%) and 93 (46%) “disagree” and “strongly disagree” respectively while 35 (17%) and 28 (13%) respondents gave the item agreement ratings of “strongly agree” and “agree” respectively. A disagreement rating for this item implied a positive experience of teaching and learning through simulation

Item number 37 (*It helped me to look at things differently*) was given an “agree” and “strongly agree” by 68 (33%) and 96 (47%) respectively whereas a rating “disagree” and “strongly disagree” of 25 (12%) and 17 (8%) respectively.

The majority of respondents 135 (51%) gave item 44 (*I was not prepared for the simulation sessions*) disagreement ratings of 68(33%) disagree and 67 (33%) strongly disagree” while 26 (12%) and 45 (22%) respondents gave agreement rating the same item number 44. A disagreement rating for this item implied a positive experience of teaching and learning through simulation.

Eighty-three (40%) and 69 (33%) gave Item 46 (*I have gained moral support during simulation*) “strongly agree” and “agree rating respectively. Disagreement ratings of 27 (13%) “strongly disagree” and 15(7%) “disagree” were given for item 46.

Item 47 (*I lacked interest during simulation*) received a “strongly disagree” rating by 93 (54%) respondents and a “disagree” rating by 50 (26%). A disagree rating for this item implied a positive experience of teaching and learning through simulation. Only 35 (13%) and 28 (7%) respondents indicated that they experienced lack of interest during simulation.

With regard to item number 49 (*I felt the lecturer displayed an attitude of respect towards the students*), ratings of “agree” and “strongly agree” of 99 (48%) and 65 (32%) respectively were given. Disagreement ratings of “disagree” and “strongly disagree” of 13 (6%) and 29 (14%) were given by the respondents.

Ninety-three (45%) and 71 (34%) responded “strongly agree” and “agree” respectively to item number 50 (*I felt the lecturer displayed an attitude of respect towards the students*) while 18 (9%) responded disagree and 24 (12%) strongly disagree

Item number 51 (*I felt that there was control during the simulation sessions*) obtained “strongly agree” and “agree” ratings of 97 (47%) and 71 (34%) respectively while the “disagree” and “strongly disagree” ratings of 16 (8%) and 22 (11%) were given for the same item.

### **Summary of results on student nurses challenges experienced from teaching and learning through simulation**

The student nurses who participated in this study gave agreement and disagreement ratings to all questionnaire items that implied positive experiences of teaching and learning through simulation. These findings are inconsistent with the findings of the study by Lee and Oh (2015:223) which revealed challenges such as lack of communication skills and the lack of adequate preparation for simulation sessions. The results show that student nurses did not experience any challenges from teaching and learning through simulation.

#### **4.4 OVERVIEW OF THE FINDINGS**

According to the findings of the study, student nurses experienced teaching and learning through simulation positively. The results showed that teaching and learning through simulation led to a significant increase in knowledge acquisition among student nurses who took part in the study. The results suggest that student nurses were able to develop competence in the clinical skills and confidence prior to placement in the clinical area. The skills that were acquired from teaching and learning from simulation-included reflection, application of theory to a skill and clinical skills because of practice, guidance and support given by the lecturers. The majority of the student nurses gave positive responses that indicated no challenge as a result of teaching and learning through simulation.

#### **4.5 CONCLUSION**

This chapter presented the analysis, interpretation and description of the research findings. Chapter 5 will present a summary of the findings, conclusions, recommendations and limitations.



## **CHAPTER 5**

### **SUMMARY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 INTRODUCTION**

In this chapter, a summary and discussion of the study findings is presented, followed by a discussion of conclusions drawn from the study, the identified limitations as well as the recommendations. Suggestions for future research in the area of teaching and learning through simulation are also included.

#### **5.2 RESEARCH DESIGN AND METHOD**

As indicated in chapters 1 and 3, the purpose of the study was to explore and describe the student nurses' experiences of teaching and learning through simulation. The objectives that were formulated to ensure that the purpose of the study was achieved were to

- describe the knowledge that student nurses gained from teaching and learning through simulation
- describe the skills that student nurses acquired from teaching and learning through simulation
- explore and describe the student nurses' attitude towards teaching and learning through simulation
- describe the challenges associated with teaching and learning through simulation from the student nurses' experiences

A quantitative exploratory and descriptive design was used to achieve the objectives of the study. The population of the study comprised of second year student nurses registered for a comprehensive course (R425 of 1985, as amended) at one public nursing college in the Gauteng Province. The number of student nurses who consented to participating in the study was 210 and it was found to be manageable and adequate for data analysis, as a result, they were all included in the survey and no sampling procedures were carried out.

Data was collected by means of a self-designed and self-administered questionnaire. As reported in chapter 3, the validity of the questionnaire was ensured by consultation with experts and the pre-testing of the questionnaire. The internal consistency of the whole questionnaire was deemed acceptable as determined by the Cronbach's' alpha of 0.9776. STATA 14 computer program was used for data analysis.

### **5.3 SUMMARY AND INTERPRETATION OF RESEARCH FINDINGS**

Two hundred and thirteen (213) questionnaires were handed out to second year student nurses who were willing to take part in the study. Two hundred and six (206) completed questionnaires were received back from respondents, resulting in a 97% return rate. The majority of the respondents were females. Accordingly, the female student nurses (81%) represented in the study shows the gender distribution in the nursing profession and at the college where the majority of students are female. A large number of participants 160 (78%) were between 18 –29 years of age, with an average age of 26yrs. All the student nurses 206 (100%) were registered with the SANC as student nurses, thereby complying with statutory requirements that all persons undergoing education or training in nursing should be registered with SANC. The student nurses who participated in the survey met the set eligibility criteria for this study.

A summary of findings of this study are presented according to the objectives of the study.

#### **5.3.1 Objective 1: To describe the knowledge that student nurses gained from teaching and learning through simulation**

The study results show that the student nurses who took part in the study gave all questionnaire items on knowledge acquisition through simulation teaching and learning "agreement ratings, which implied positive experiences. According to the results, the knowledge that the students gained from teaching and learning through simulation included:

- Making connections between theory and practice
- Learning outcomes were achieved
- Could apply simulation to practice

- Simulation re-enforced learning
- Through simulation, clinical and theoretical knowledge was tested
- Increased the knowledge a principle of doing a skill

The results of the study were consistent with findings of a many studies that reported significant gains in knowledge because of teaching and learning through simulation (Akhu-Zaheya et al 2012; Cant & Cooper 2010; Hope et al 2011; Lewis & Ciak 2011:256).

### **5.3.2 Objective 2: Describe the skills that student nurses acquired from teaching and learning through simulation**

The results show positive student nurses' responses to all questionnaire items on skills acquisition as evidenced by "strongly agree" and "agree" ratings given. The skills acquired included the following:

- Clinical skills
- Refine clinical skills through practice
- Competence
- Critical thinking
- Reflection
- Confidence
- Decision-making

The student nurses' responses to items on skills acquired from simulation reflected findings similar to other studies in the literature (O'Boyle-Duggan 2010; Decker et al 2015; Dunn et al 2014; Ehlers 2012:130; Moughrabi & Wallace 2015).

### **5.3.3 Objective 3: Explore and describe the student nurses' attitude towards teaching and learning through simulation**

According to the findings of the study, the student nurses' attitude towards teaching and learning through simulation was found to be positive. The student nurses attitude towards the effects of simulation on their self-esteem, personal growth, stress experience reduction

and self- confidence were positive. The majority of student nurses gave disagreement rating to items in the questionnaire that related to negative attitudes towards simulation. Sharpnack, Goliat, Baker, Rogers and Shockey (2010:e571-e577) reported similar findings, that simulation was found to be realistic, collaborative, individualised and supportive, and the study also found the positive experience provided by simulation of an opportunity to gain, mastery of clinical thinking skills and clinical competencies. The results of the study by Zepure et al (2014:408) showed that the student nurses agreed that the simulation accurately reflected what they saw in the clinical settings.

#### **5.3.4 Objective 4: describe the challenges that student nurses experienced from teaching and learning through simulation**

Interestingly, the results show that student nurses who took part in this study did not experience challenges from teaching and learning through simulation.

### **5.4 CONCLUSIONS**

The following conclusions were drawn based on the findings of the study:

- Student nurses experience simulation positively.
- Teaching and learning through simulation, the results show increase in knowledge after the simulation experience.
- The use of simulation allows the student nurses the opportunity to practice and refine their skills.
- Simulation enabled the student nurses to gain the necessary skills required to meet their objectives.
- The simulation experience enabled the student to acquire skills such as reflection, clinical skills, confidence and decision-making.

### **5.5 RECOMMENDATIONS**

Based on the study findings, the following are recommended:

### **5.5.1 Practice**

This study supports teaching and learning through simulation as a method for nursing students. The study results show that the students had a positive simulation experience. Therefore, it is recommended that lecturers continue to maintain a safe simulation-learning environment for student nurses. However, based on the findings of the literature review on trends and best standards for simulation, it is recommended that the college where the study was conducted need to introduce the use of high virtual technology and high-fidelity simulation to be up to date with trends and for managing the large number of second year student nurses

### **5.5.2 Further research**

- Further research is needed using qualitative approaches into the student nurses' experiences of teaching and learning through simulation.
- The study should be conducted again with a broader target group and more diverse population.

## **5.6 CONTRIBUTIONS OF THE STUDY**

The findings of this study have contributed to the body of knowledge on student nurses' experiences of teaching and learning through simulation in nursing education. In addition, the findings provided the college with the necessary feedback regarding teaching and learning through simulation. Even though the feedback from the student nurses was positive, there is need to include virtual technology in simulation teaching and learning.

## **5.7 LIMITATIONS OF THE STUDY**

The study was limited to second year nursing students of a selected public nursing college in the Gauteng Province, thus this study cannot be necessarily generalised to other nursing colleges. The research was only conducted on second level nursing students; therefore, it is not representative of all student nurses trained at this particular nursing college where the research was conducted.

## **5.8 CONCLUDING REMARKS**

The study shows that there is potential of simulation training as a teaching and learning strategy. According to the findings of the study, student nurses experienced teaching and learning through simulation positively. The results showed that teaching and learning through simulation led to a significant increase in knowledge acquisition among student nurses who took part in the study. The results suggest that student nurses were able to develop competence in the clinical skills and confidence through teaching and learning through simulation. The results also showed that the students displayed a positive attitude towards teaching and learning through simulation. The results show that there were no challenges experienced by student nurses from teaching and learning through simulation.

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## **ANNEXURES**

## ANNEXURE A

### Ethical Clearance from the Research Ethics Committee: Department of Health Studies; Unisa



**UNIVERSITY OF SOUTH AFRICA  
Health Studies Higher Degrees Committee  
College of Human Sciences  
ETHICAL CLEARANCE CERTIFICATE**

**REC-012714-039**

**HSHDC/507/2016**

Date: 3 February 2016

Student No: 4112-100-7

Project Title: Teaching and learning through simulation: Student nurses' experiences.

Researcher: Nirmala Poliah

Degree: MA In Nursing Science

Code: MPCHS94

Supervisor: Dr ME Chauke

Qualification: D Litt et Phil

Joint Supervisor: Prof GH van Rensburg

**DECISION OF COMMITTEE**

Approved



Conditionally Approved



Prof L Roets  
for CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE

*Prof L M Moleki*

Prof MM Moleki

ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

## ANNEXURE B

### Letters requesting permission to conduct the study

#### NATIONAL HEALTH RESEARCH DEPARTMENT

Mpho Lathata  
011 2514354  
23 March 2016

#### RE: Request for permission to conduct research study

Dear Madam

I am a student, registered with the University of South Africa (UNISA) for a Master in Nursing Science degree. I request permission to conduct research at your college, SG Lourens Nursing College. The title of the study is **Simulations as teaching and learning strategies: Student nurses' perspective**. The study will be conducted under the supervision of Dr M E Chauke and Prof. G van Rensburg.

The purpose of study is to explore and describe the student nurses' perspective of simulations as teaching and learning strategies. The findings of this study have potential to contribute to the body of knowledge on the effective use of simulations as teaching and learning strategies in nursing education from the student nurses' perspective. In addition, the findings have the potential to provide the college with information to improve the current use of simulations as teaching and learning strategies. The research is focused on the 2<sup>nd</sup> year basic nursing students. Data will be collected by means of a self-administered questionnaire.

The study will be carried out in strict accordance with the following ethical protocols in order to protect the rights of the institutions and those of the study participants, the student nurses;

- **Informed consent:** before signing the consent form, the student nurses will be given information regarding the study purpose, procedures, and expected duration of participation in the covering letter that will accompany the questionnaire. Student nurses who have not given informed consent will be excluded from the study.
- **Confidentiality and anonymity:** the student nurses will not be expected to write their names on the questionnaires. The identity of the college will be protected and not disclosed in any way. All the data collected will be kept confidential, and protected from unauthorised access
- **Justice:** the researcher will make use of the predetermined inclusion criteria to select participants for the study to ensure proper representation in the research samples. The researcher is aware of the potential vulnerability of all the participants because of their status as student nurses and the researcher as their lecturer. Adequate information about the study will be given including the participants right to refuse to participate or withdraw from the study at any time without explanation if they so wished.
- **Beneficence and non-maleficence;** the student nurses will be at no foreseeable physical harm from the study as it involved completion of the questionnaires. The study was only conducted after the research ethics committee had issued ethical clearance

- **Scientific integrity:** the research process will be followed and documented and the research findings will be disseminated by means of articles in relevant journals.

Herewith the research protocol, data collection instruments, the ethical clearance certificate from UNISA and the letter granting permission to conduct the study from Department of Health: Gauteng province.

Sincerely

Mrs Nirmala Poliah (Researcher)  
Master in Nursing Science, University of South Africa  
Student Number: 41121007

The Principal  
SG Lourens Nursing College  
Private Bag X755  
Pretoria  
6 September 2015

**RE: Request for permission to conduct research study**

Dear Madam

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- **Justice:** the researcher will make use of the predetermined inclusion criteria to select participants for the study to ensure proper representation in the research samples. The researcher is aware of the potential vulnerability of all the participants because of their status as student nurses and the researcher as their lecturer. Adequate information about the study will be given including the participants right to refuse to participate or withdraw from the study at any time without explanation if they so wished.
- **Beneficence and non-maleficence;** the student nurses will be at no foreseeable physical harm from the study as it involved completion of the questionnaires. The study was only conducted after the research ethics committee had issued ethical clearance
- **Scientific integrity:** the research process will be followed and documented and the research findings will be disseminated by means of articles in relevant journals.

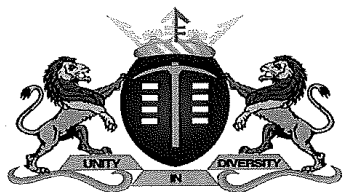
Herewith the research protocol, data collection instruments, the ethical clearance certificate from UNISA and the letter granting permission to conduct the study from Department of Health: Gauteng province.

Sincerely

Mrs Nirmala Poliah (Researcher)  
Master in Nursing Science, University of South Africa  
Student Number: 41121007

## ANNEXURE C

### Letters granting permission to conduct the study



## GAUTENG PROVINCE

HEALTH  
REPUBLIC OF SOUTH AFRICA

### OUTCOME OF PROVINCIAL PROTOCOL REVIEW COMMITTEE (PPRC)

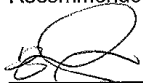
Researcher's Name (Principal investigator)	Mrs Nirmala Poliah Poliah
Organization / Institution	Helen Joseph Hospital
Research Title	Simulations As Teaching And Learning Strategies In Nursing Education: Student Nurses' Perspective.
Contact number	Address: N/A Contact no: N/A Cell: 0845990965 Email: mala.poliah@gmail.com
Protocol number	GP_2016RP14_337
Date submitted	30/05/2016
Date reviewed	26/07/2016
Outcome	Approved

It is a pleasure to inform you that the Gauteng Health Department has approved your research on Simulations as Teaching and Learning Strategies in Nursing Education: Student Nurses' Perspective.

Study sites: GDoH Nursing Colleges

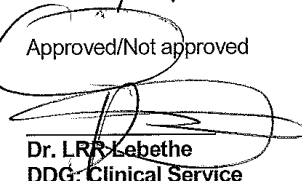
The Provincial Protocol Review Committee kindly requests that you to submit a report after completion of your study and present your findings to the Gauteng Health Department.

Recommended/~~Not Recommended~~

  
**Dr. B. Ikalafeng**  
(on behalf of the PPRC)

Date: 28/07/2016

Approved/Not approved

  
**Dr. LRS Lebethe**  
DDG: Clinical Service

Date: 29 07 2016



## GAUTENG PROVINCE

HEALTH  
REPUBLIC OF SOUTH AFRICA

Enquiries : Ms. N.B Mothokoa  
Tel : 012 319 5717  
Fax : 012 319 5742  
E-mail [norma.mothokoa@gmail.com](mailto:norma.mothokoa@gmail.com)  
Reference Number: 8/1/7/5/2

Ms. Nirmala Poliah  
28 Fuchsia Gardens  
3 Grant Street  
Eldorainge x 47  
0157

### SUBJECT: APPROVAL FOR DATA COLLECTION

This serves as a response to your request in undertaking the study on: **Simulations as Teaching and Learning Strategies in Nursing Education: Student Nurses 'Perspective.**

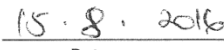
Permission is hereby granted for collection of data as indicated in your proposal.

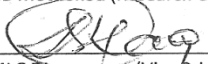
Please take note of the following:

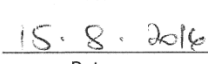
- All information and data collected should be treated as confidential and ethical considerations adhered to as stated in the proposal.
- At the end of the study kindly furnish the college with the study results as well as a copy of your final dissertation.
- The Committee might invite you to present during their annual research day.

Thank you

  
Ms NB Mothokoa (Research Committee Chairperson)

  
Date

  
Ms MLC Digangane (Vice Principal)

  
Date





## **ANNEXURE D**

### **Cover letter requesting the student nurses participation in the study (consent form)**

**Dear Respondent**

My name is Nirmala Poliah, a registered student at the University of South Africa doing a Master's degree in public health. I am conducting a research project entitled '*Using simulations as teaching and learning strategies in nursing education: Student nurses' perspective*'. The purpose of study is to explore and describe the student nurses' perspective of the use of simulations as teaching and learning strategies.

I would appreciate it very much if you could consider participating in my research. Your participation is important because it will provide the college with valuable information regarding your views, opinions and feelings about the use of simulations as teaching and learning strategies, and this will help improve the implementation of simulations as teaching strategies. In addition, the findings of this study have potential to contribute to current literature on the use of simulations as teaching and learning strategies in nursing education from the student nurses' perspective.

Your involvement in the study will be in the form of completion of a questionnaire. Participation is voluntary; meaning that you can refuse to participate or withdraw from the study at any time if you feel uncomfortable even if you had already signed a consent form. Refusal to participate will not affect your studies in any way. Confidentiality will be ensured by not using your name or address on the data collection record and the final report of this study. There are no foreseeable physical, psychological or social risks or discomforts involved in participating in this study.

Your participation in this research is highly appreciated. I welcome any question you may have about the study and your participation. You can contact me at 0845990965, [mala.poliah@gmail.com](mailto:mala.poliah@gmail.com).

Sincerely

Nirmala

## CONSENT FORM

I, the undersigned agree to participate in the abovementioned research study. I confirm that the researcher has explained the following to me:

- My participation in the study is voluntary and may withdraw and discontinue participation at any time without penalty
- I will not be paid for my participation in the study.
- A Questionnaire will be provided for you to answer
- The researcher will not identify me by name in any reports and that my confidentiality as a participant in this study will be maintained remain secure
- All materials containing identifying information will be destroyed once the study is complete.

I have read and I understand the information provided to me and have had all my questions answered to my satisfaction and I voluntarily agree to participate in the study.

Name of respondent \_\_\_\_\_

Age of the respondent \_\_\_\_\_

Signature of the respondent \_\_\_\_\_

Signature of the researcher \_\_\_\_\_

Date \_\_\_\_\_

## ANNEXURE E

### Questionnaire

[Type the document title]

[Year]

#### QUESTIONNAIRE

Questionnaire No: \_\_\_\_\_ (for office use)

#### Instructions:

- This questionnaire consists of two (2) sections. It will take you a maximum 30 -40 minutes to complete
- Please answer all the questions with honesty and without assistance.
- Do not write your name or personal details on the questionnaire.
- Please do not write in the column marked “ office use only”
- I will appreciate it if you could return the completed questionnaire on completion.

#### Section A: Biographical and general information

Please tick the appropriate box to indicate your choice (✓) to items 1-5			Office use only											
			<input type="checkbox"/>											
1. Gender	<table border="1"><tr><td>Male</td><td>1</td><td></td></tr><tr><td>Female</td><td>2</td><td></td></tr></table>	Male	1		Female	2		<input type="checkbox"/>						
Male	1													
Female	2													
2. Age	<table border="1"><tr><td>18-29</td><td>1</td><td></td></tr><tr><td>30-39</td><td>2</td><td></td></tr><tr><td>40 -55</td><td>3</td><td></td></tr></table>	18-29	1		30-39	2		40 -55	3		<input type="checkbox"/>			
18-29	1													
30-39	2													
40 -55	3													
3. Are you currently registered with SANC as a student nurse doing a 4 year course?	<table border="1"><tr><td>Yes</td><td>1</td><td></td></tr><tr><td>No</td><td>2</td><td></td></tr></table>	Yes	1		No	2		<input type="checkbox"/>						
Yes	1													
No	2													
4. Level of training	<table border="1"><tr><td>First year</td><td>1</td><td></td></tr><tr><td>Second year</td><td>2</td><td></td></tr><tr><td>Third year</td><td>3</td><td></td></tr><tr><td>Fourth year</td><td>4</td><td></td></tr></table>	First year	1		Second year	2		Third year	3		Fourth year	4		<input type="checkbox"/>
First year	1													
Second year	2													
Third year	3													
Fourth year	4													

## SECTION B: OPINIONS, VIEWS AND FEELINGS ABOUT SIMULATIONS AS TEACHING AND LEARNING STRATEGIES

Below are the statements about simulation as a teaching learning strategy. After reading each statement, please write a response level number to each statement in the appropriate box to indicate the answer that best describes how your opinions, views and feelings about issues addressed in each statement using the rating scale provided below

The rating scale values are interpreted as:

- 1 Strongly agree
- 2 Agree
- 3 Disagree
- 4 Strongly disagree

SIMULATIONS AS TEACHING STRATEGIES	Your rating				Office use only
	1	2	3	4	
1. I learn a variety of clinical skills without fear of harming real patients					
2. I get the opportunity to reflect on my performance and learn from my mistakes					
3. I felt the lecturer had both clinical experience and theoretical knowledge on the skill simulated					
4. I could understand the lecturer					
5. I was provided with opportunity to reflect on practice during simulation					
6. I got the opportunity to express my own views					
7. I was directly involved in my own learning					
8. I was able to make my own connections between theory and practice					
9. I was encouraged to learn more					
10. I felt I could be a safe practitioner					
11. I felt that the learning outcomes set was achieved					
12. I felt the direct assistance and support helped me master the skills					
13. I felt clinical simulation increased my self-esteem					
14. I realized the extent of what could happen on a real patient					
15. I experienced that simulation made me more aware when checking the patient					
16. I had a written procedure to follow					
17. I was demonstrated the procedure by the lecturer					
18. I was given the opportunity to practice the skill					
19. I was given feedback after the simulation session					
20. I felt discouraged or frustrated during the simulation session					
21. I was able to identify any deficiencies in the skills I practiced					
22. I did learn from the simulation training					
23. I thought the environment accurately reflected reality					
24. I was actively involved in the simulation sessions					

SIMULATIONS AS TEACHING STRATEGIES	Your rating				Office use only
	1	2	3	4	
25. I felt increase in my confidence levels during simulation					
26. I felt simulation contributed to application of a skill					
27. I felt that simulation had no relevance to practice					
28. I felt the simulated skills in the laboratory are not the same as in practice					
29. I felt simulation was not helpful towards my learning					
30. I felt simulation helped me apply skills with a positive attitude					
31. I could experiment with skills on non-living patients					
32. I felt competent after simulation sessions					
33. I am satisfied with the simulation experience					
34. I felt simulation was of no benefit to me					
35. I can see more clearly how I can apply simulation to practice					
36. It assisted me with my personal emotional growth					
37. It helped me to look at things differently					
38. I have learnt from looking at other's experiences					
39. I felt simulation re-enforced my learning					
40. I felt that it helped me identify my problem areas					
41. It tested my clinical and theoretical knowledge					
42. I experienced a lot of stress during simulation					
43. My level of competence was not assessed					
44. I was not prepared for the simulation sessions					
45. It increased my knowledge of a principle of doing a skill					
46. I have gained moral support during simulation					
47. I lacked of interest during simulation					
48. I was able to demonstrate back the skill					
49. I felt the lecturer displayed an attitude of respect towards the students					
50. I felt that there was control during the simulation sessions					
51. I felt the lecturer was available during practice sessions					

**THANK YOU**